



Lieut. George R. LeSauvage, in command of a squadron of submarine chasers and the man charged with keeping the U-boats away from New York City. Lieut. LeSauvage was formerly commodore of the Bensonhurst Yacht Club and immediately upon the Declaration of War turned his clubhouse into a recruiting station, established instruction classes for officers and men and was instrumental in putting several hundred men into the Naval Reserve Force

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January 1919

THE NEW YORK  
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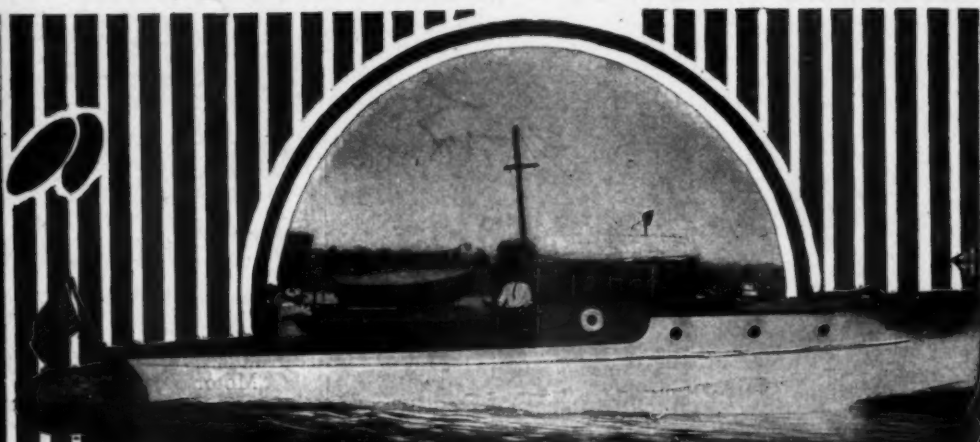
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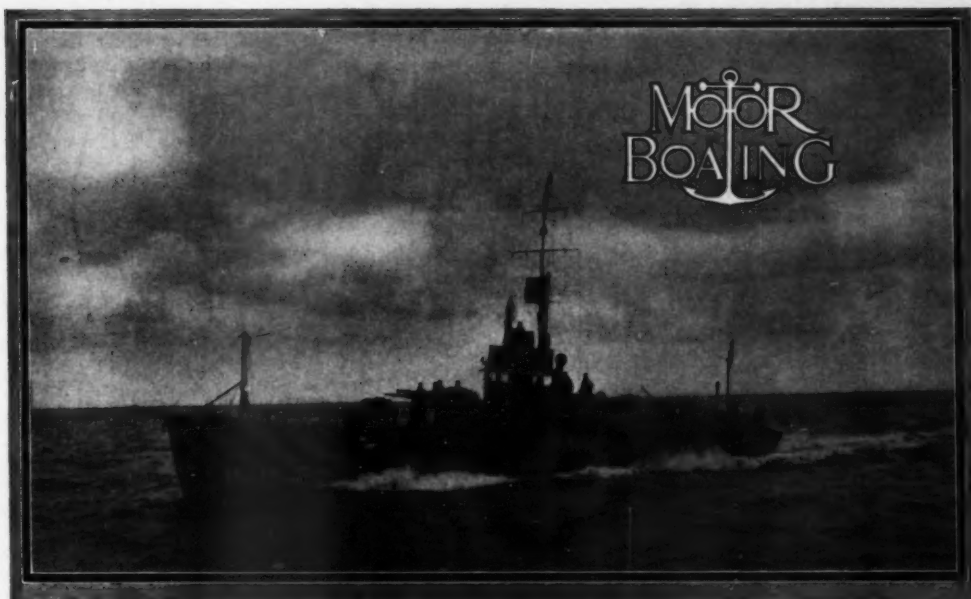
### Great Lakes Boat Building Corporation

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*Submarine Chaser 292 at full speed. This chaser is one of those built at Seattle, Wash., and which made a remarkable run to New York via the Panama Canal. The boats reported no engine trouble of any kind on their long voyage*

## The Submarine Chaser As A Fighting Ship

The Remarkable Record Made by the American-Built 110-Footers During the War  
Some of the Service Which Their Crews Have Seen and the Duties Performed

By Charles F. Chapman

THE history of the war is soon to be written. When it is written, well-deserved credit will go to many branches of the army, naval, and air service for their many heroic and gallant acts of bravery and faithfulness to their assigned duty. But no words of praise can be spoken of any more deserving branch of our great war machine than that performed by the motor boatmen of the country aboard the small motor-driven craft, the submarine chasers and coast patrol boats on this side of the Atlantic and overseas.

Much has been written of the service of these boats, the hardships to which their crews were subjected, and the efficiency of these tiny ships at sea, but all that has so far appeared in print is insignificant compared with their importance and the results of their work. Naturally, much had to be omitted from the printed stories in war time and left to the readers' imagination, but the real facts will now begin to become known. The American public will soon learn of the great part which the motor boats and their crews performed in the great war for democracy. When they do learn of them, the many acts of bravery performed at sea and the submarine fighting devices with which many of these boats are equipped, many of which they never dreamed existed, a little of



*Just part of the crew of chaser. Altogether there are twenty-four men and two officers aboard each 110-footer*

the credit will be bestowed upon the deserving ones. Our fleet of small naval craft made its appearance overnight. The day on which war was declared, not a single small fighting ship was enrolled in the Navy. By peace day, the number of such boats was well over a thousand. The same is true of the crews for the boats, which were drawn largely from the Naval Reserve Force. From a force of barely a dozen men up to one numbering several hundreds of thousands is a record which no other branch of the military service can equal.

The submarine chasers, a new thought in the annals of naval history, have without doubt performed the greatest and most important service of our fleet of small ships. These boats, popularly known as the 110s, were in the beginning condemned by nearly everyone in the country from Congress down, including many naval officers, boat and engine builders, naval architects, and yachtsmen. But they have proven their worth a million times over. As their achievements begin to become known from now on, the chasers will become the idols of the American people.

There is not the least doubt but that it was the 110s that kept the U-boats from the American shores. It is a matter of records that the American chasers drove the Ger-



man and Austrian submarines out of the Mediterranean. Given a few months more and they would have driven them from the North Sea.

In protecting the convoys of troop and cargo ships, the value of our chasers can never be figured in dollars and cents.

The enemy knew of their presence and had learned of their deadly work so they kept a safe distance away from the shipping lane which the troop ships and freighters followed.

Volumes could be and will be written of the great work of these little ships and their crews. It was the hardest service of any. The boats were always on duty. There was no such thing as "liberty" for their officers and crews. They were out at sea sometimes hundreds of miles out, for twenty-nine days out of thirty-one.

Some of the chasers were assigned to "listening duty". It was listen, listen, listen all day and all night. There is at least one case on record where a chaser stayed out on duty four days overtime as her crew thought they heard a sub nearby. The supply of provisions and water ran low and officers and men alike were on shortened rations. When they did go in again and reported back to their base with the hopes of a few hours respite, orders were awaiting them for new duty as soon as a few provisions and a little water and fuel could be put aboard.

Their next duty was perhaps to be one of six chasers to form the convoy for forty freighters going across which was at that time making up in lower New York Bay. Down the harbor at full speed the chasers would go and take the positions assigned to them to port or starboard of the line of freighters stretching down toward the horizon as far as the eye could carry for miles and miles, bound overseas.

At dusk the order would be given to the convoy to proceed and then one of the most serious and hazardous

sides of the chaser service would begin.

Not only must the crews of the chasers keep a watch out on all sides for the U-boats, as they were the sole protectors of the ships bearing the precious cargoes of food and supplies to the front and were responsible for their safety, but they must watch out for their own selves as well. Acting as convoy for forty or more ships running at night without lights of any kind and at full speed at all times, in fog

and in all kinds of weather is about the riskiest kind of employment one could be in. The ships under convoy never had been together before, were of different speed and lacking in the proper essentials of signalling and speed control to keep in line. As a result they were all over the lot, so to speak, and cared not that perhaps a tiny chaser might be in the darkness a few lengths ahead or off their port bow doing the double duty of protecting the convoy from the U-boats and themselves as well. So it was a constant strain on the officers of chasers. They were all on watch all the time, the theoretical naval regulations permitting an officer to be off watch half the time being cast to the winds.

Then again, a chaser at night or in the fog, had an unmistakable resemblance to a U-boat and the gun crews of the merchantmen never stopped to look twice to make sure of the identity of the stranger. If one of the chasers got ahead a little too far or dropped back momentarily and by chance approached one of the vessels unexpectedly out of the darkness, the chances were that she'd be taken for an enemy sub and given a charge of lead before the proper identification signals could be exchanged. The chances were that no identification signals had been pre-arranged between merchantman and chaser for the Navy Department wasn't apt to take any risks of giving out secret codes to merchantmen of perhaps doubtful neutrality, and so the chaser crews had to rely upon the flexibility and maneuvering qualities of the boats and power plants to get them out of



*Big Bertha on the forward deck of the chaser. A 3-inch gun with which the gunners could hit the mark every time*



*The famous Y gun and its two depth bombs which it shoots. Both bombs are fired together and go out 50 to 100 feet on each side of the boat*

*Each bomb contains 100 pounds of T N T and is discharged by pressure of the water as the bomb sinks. The bombs can be set to go off at any desired depth*





*On the after-deck of a chaser in a seaway. Note by the easy pose of the crew that they have their sea-legs with them*

*The wireless operator is one of the most important members of the crew. Each chaser has two radio men, one of whom is constantly "listening in"*

many a tight hole—but they never found the little ships under them lacking.

Out 150 or 200 miles, they would convoy the big ships and then turn back and run full speed for port again to repeat the operation. Or perhaps orders would come to them to lay to for a couple of days in this or that longitude and wait for an incoming convoy. Perhaps this convoy must be picked up at night a couple of hundred miles from nowhere with seas running mountainous high. As no lights could be carried by any of the ships or chasers the job was anything but charming—but it had its fascinations, all the same.

So it went day in and day out, with no let up. But there was no failing of crews or boats, no complaining and everything was kept up in the highest condition of efficiency.

One afternoon last winter, the orders came to a squadron based at Bensonhurst

*The signalmen on S C 293, responsible for the correct receipt and transmission of all wigwag, semaphore and international code signals. Note the Esquimo suits which are furnished by the Navy Department to all men on the chasers*

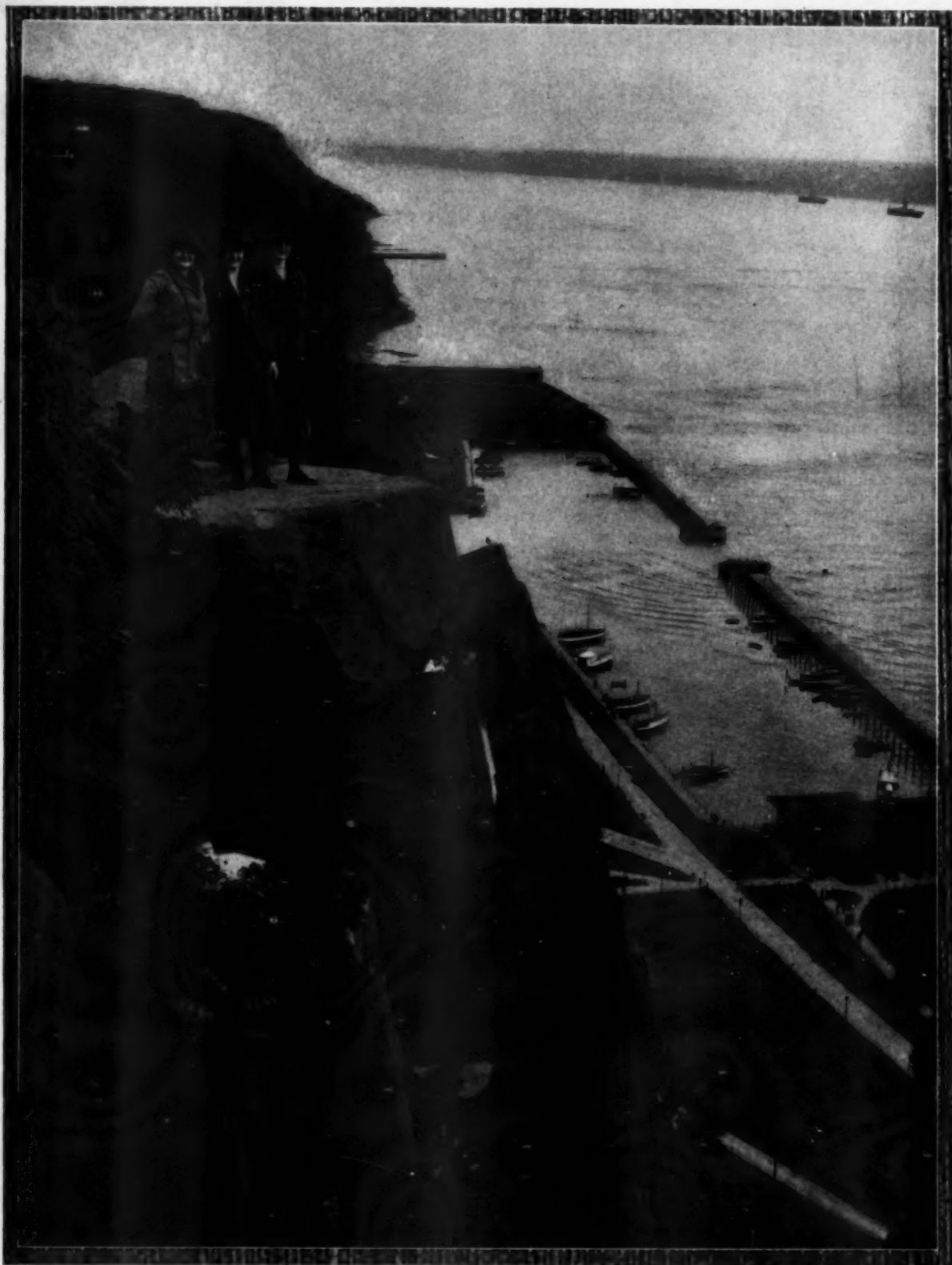


*If Mr. Sub decided to try to beat the game by lying still on the bottom this trailer was put to work over the stern of the chaser. When the drag comes into contact with any metallic substance on the bottom it completes an electric circuit and a bell is automatically rung on the bridge of the chaser. A depth bomb does the rest*



for a division to proceed to New London to have the boats equipped with hydrophones and fitted out for overseas service. The thermometer stood at ten below zero and the wind at a velocity of fifty to seventy miles from the northwest. The orders read proceed outside as Long Island Sound was frozen solid. In a few minutes the division was underway heading out to sea. The boats were new, the engines untried, and the crews green, but that made no difference. Orders

*(Continued on page 48)*



(C) Photograph by Publishers Photo Service

*Along the west bank of the Hudson River from Fort Lee, N. J., to Snedens Landing, N. Y., is one of the finest natural playgrounds for motor boatmen to be found anywhere. It includes within its limits the vertical cliffs and heavily wooded slopes of the Palisades as well as many docks and landings along the river. The illustration above shows one of the many basins especially built for motor boats with its individual slips for small boats and a two-story rustic pavilion at each end*

# Spending Millions for the Motor Boatmen

A Natural Playground Including within Its Limits. Cliffs, Mountains, and Unequalled Opportunities for Outdoor Life

**A**LONG the west bank of the Hudson River from the southern end of the Palisades at Fort Lee, N. J., to the northern end of the Highlands at West Point, a distance of nearly forty miles, there has been set aside for the



*Many facilities have been provided for campers and motor boat parties. The springs and wells have been walled up and provided with pumps. Several picnic pavilions similar to the one at Forest View Landing have been built and everyone is welcome*

people's use a park of which there is nowhere an equal. The Interstate Palisade Park is truly a motor boatman's playground. Practically all of the river bank and the adjacent mountain slopes, except where towns or villages already existed, have been taken over and turned into a public park by the States of New York and New Jersey to be maintained in its original and natural state of beauty.

Within the limits of this park are the picturesque Palisades and the historic Highlands of the Hudson. The entire tract is open to the public for picnicing, camping or tramping; all without a cent of cost. Although the greater part of the park is inaccessible except by water, an automobile highway is being built throughout its length, following where possible the foot of the cliffs, but where necessary climbing by easy grades to the top of the ridge and running back through the heavily wooded hills.

Within the lower part of the park between Fort Lee and Snedens Landing are the Palisades. These vertical cliffs of trap rock are almost unbroken throughout the

entire distance of twelve miles, with the top of the cliffs ranging from 300 feet above the river at the southern end to over 500 feet at the northern end. It is this portion of the park that the great majority of people visit. Here there are campers' tents by the hundreds along the river bank. A camp site can be had for the asking. The only formality required is a permit granted free of charge by the Park Commission. Almost without exception the camping parties come by motor boat or canoe.

Along this same stretch of river front there have been built over a dozen docks or landings and three basins for the accommodations of motor boats. Here it is possible to run your boat into a basin and stay a day, a week or a season safely moored behind the substantial bulkheads. The basin at Englewood Landing, the largest of the three, will accommodate from eighty to 100 motor boats. Individual slips with plank runways between have been provided for about forty small boats. At each end of the basin there is a two-story rustic pavilion provided with tables and benches for those





*The Palisades are historic as well as picturesque. Above is shown the house that served as Cornwallis' headquarters during his advance up the river during the Revolution. Be-*

who prefer to spread the contents of their lunch baskets beneath the shelter of a roof. There is also a passenger and vehicle ferry running from here across the river to Dyckman St., New York City, within a short distance of the subway.

At Hazard Landing there is another large two-story pavilion, half stone and half rustic wood work, easily reached by a passenger ferry from West 158 St., New York City. Here there is also a bathing beach, artificial to be sure, but nevertheless patronized by hundreds of people every Saturday, Sunday, and holiday during the summer. At Forest View Landing opposite Hastings there is another picnic pavilion and two long docks forming a basin for motor boats. In the past this has been a favorite resort for steamboat excursions as well as motor boat parties.

A little south of Forest View is Alpine Landing, which is at the foot of an old wagon road winding down along the steep sides of the Palisades from the village of Closter, located several miles back from the river. Here is a little old stone and frame house once occupied by General Cornwallis as his headquarters during the war of the Revolution in which the park police and maintenance forces make their headquarters. Here also there is a small basin for motor boats and the Park Commission's fleet of five or six motor boats.

Many conveniences for visitors to the park have been provided without in any way interfering with its natural beauty. A foot path has been built along the water's edge from the southern boundary to the northernmost dock at Forest View. The wells and natural springs have been walled up and provided with pumps. Signs

have been posted at intervals indicating the direction to the nearest well or spring. There are also a number of sanitary toilets of the tank type located in little log cabins throughout the park. Bath houses and small open-sided sheds with tables and benches have been built at suitable locations.

The rules governing the conduct of visitors and campers are few and extremely simple. The more important ones are that no intoxicating liquor can be taken into the park. All lunch boxes, papers, camp refuse, etc., must be collected and burned or otherwise disposed of. No tent can be set up without a permit and no camping is allowed in the more

Photographs by Rosenfeld



*low is one of the two pavilions at the ends of the Englewood Landing basin. The public not only enjoy the privileges of the park but also help take care of it*

frequented part of the park south of Alpine. Growing trees and brush must not be cut or otherwise harmed.

To enforce these rules a uniformed police force has been organized by the Park Commission. To effectively cover this large tract one officer is stationed at every dock while another patrols the territory between. Even with the thousands—many thousands—who visit the park every Saturday and Sunday there is little work for the park police.

As may readily be realized the dangers of an accident where so many men, women, and children are on the docks, along the shore, swimming in the river, and in boats and canoes, is ever present. To reduce the danger of serious results to a minimum the Park Commission have aboard their fastest motor boat and also at the most frequented localities a pulmotor ready for immediate use. There is also a telephone system extending throughout the length of the park with instruments located at frequent intervals in weather-proof cast iron boxes by means of which help can be summoned should the necessity arise.

Being just across the river from the upper part of New York City and within a few miles of over twenty yacht clubs and boathouses Palisade Park is a favorite resort for motor boatmen. Every week-end finds hundreds of motor boats anchored along the shores of the park and tied up in the basins while their crews seek recreation ashore.

Here are to be seen every size and type of motor boat from the little home-made skiff with a one-lung kicker to the palatial motor yacht, but no matter whether the boat be large or small, the park is equally available to all who would take advantage of its facilities.

# Making Gasoline from Gas

How Our Supply of Motor Fuel Is Materially Increased from What Was Once Considered Almost a Waste Product

OUR gasless Sundays have brought forcibly to the attention of the public that our sources of gasoline are not inexhaustible and that the production of the refineries is limited both by the amount of crude oil available and the capacities of the plants themselves. Besides the older method of obtaining gasoline by the distillation of crude oil there are two newer processes which increase the output without requiring a greater production of crude oil. First there is the process of "cracking" some of the heavier distillates into several fractions, of which gasoline is one, and second, the recovery of gasoline from natural gas which is always present in the oil-bearing sands. It is this latter method that is now producing gasoline in large quantities.

Not so many years ago the natural gas that came from the oil wells was disposed of by burning in the open. The wastefulness of this method was quickly realized, so the gas was collected and piped to the nearby towns and cities and sold at very low rates. A great deal of it was used, and rather wastefully, in industrial plants and burned as a fuel under steam boilers. This gas is now producing power much more economically in internal combustion engines.

Although it is called natural gas by most people, it is termed casing head gas by the oil industry. This term is derived from the fact that in driving oil wells a casing or large diameter pipe is first sunk to at least below ground water level and often much deeper. Inside this casing is the smaller pipe that penetrates the oil-bearing strata. A great deal of the gas, which is always present in the oil-bearing

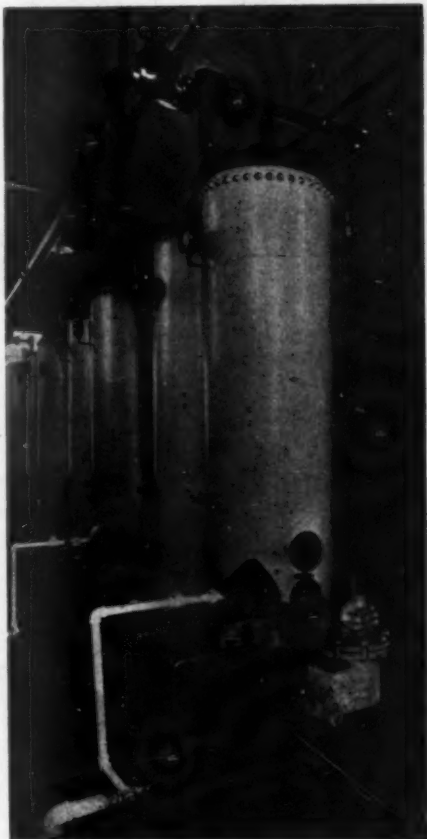
sands, collects in the space between the oil pipe and casing.

When wells are first drilled and shot this casing-head gas is generally under high pressure, sometimes as much as 1,500 pounds per square inch. This is termed rock pressure. As long as the gas remains at high pressure it contains little gasoline vapor, so that gases at pressures over 400 pounds per square inch are seldom worked for gasoline. As the pressure falls the proportionate amount of gasoline vapor shows a marked increase. Some wells are being successfully worked where the gas is obtained under a vacuum of 10 and 12 pounds, and are a financial success even with the necessary pumping.

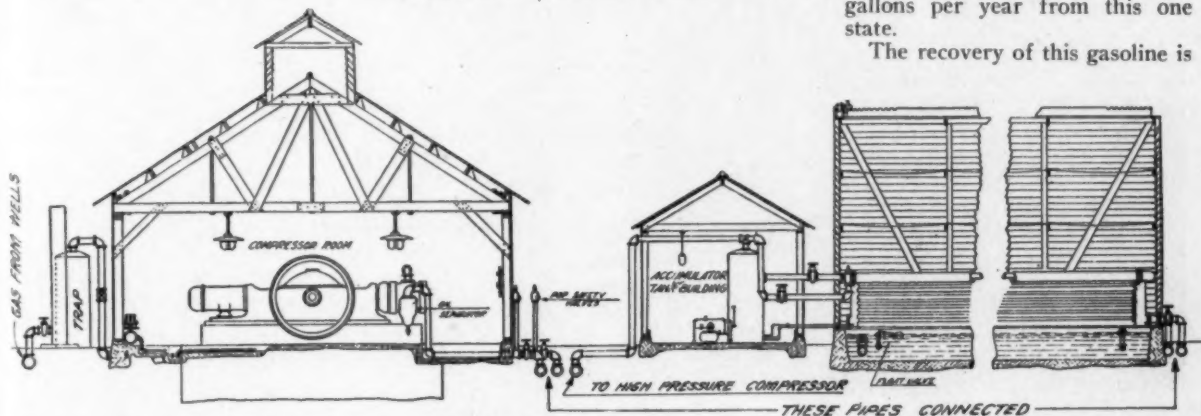
It was found that this natural gas contained more or less gasoline vapor and that under certain conditions this gasoline would condense and must be drawn off from the gas pipes or containers. This soon led to the establishment of plants for the recovery of this gasoline, and as the gas had nearly the same commercial value after the extraction of the gasoline the industry grew rapidly and prospered. By 1915 it was producing gasoline in large quantities.

The investigations of the U. S. Geological Survey show that in the United States during 1915 there was produced and sold 65,364,665 gallons of gasoline from natural gas, and that the average yield was 2.57 gallons of gasoline per 1,000 cubic feet of gas. This amount of gasoline was produced by only 414 plants. In January, 1917, there were ninety-five plants in operation in Oklahoma alone, with an estimated daily production of 200,000 gallons of gasoline from gas, which would be about 60,000,000 gallons per year from this one state.

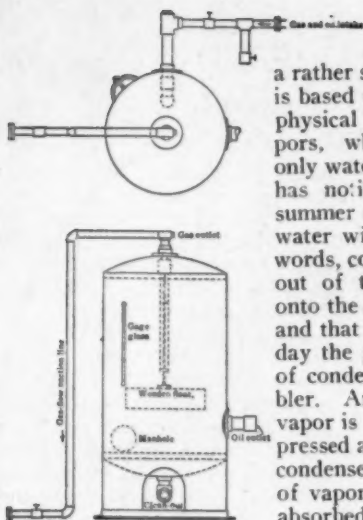
The recovery of this gasoline is



Where the gasoline is collected. A row of accumulator tanks showing the traps which automatically draw the gasoline as it accumulates and deliver it through the smaller pipes to the storage tanks. Note the frost on the pipes



Cross section of a typical gasoline recovery plant showing the general arrangement of the apparatus employed in the process



One type of trap used to separate natural gas and crude oil at the wells

a rather simple process which is based on three elementary physical properties of vapors, whether gasoline or only water vapor. Everybody has noticed that on a hot summer day a tumbler of ice water will "sweat," in other words, condense the moisture out of the surrounding air onto the surface of the glass, and that the more humid the day the greater the quantity of condensation on the tumbler. Another property of vapor is that when it is compressed a certain amount will condense. The third property of vapor is that it is readily absorbed in one or more liquids, and not all vapors are soluble to the same degree in the same liquids.

Some gasoline is extracted from natural gas by this last, or absorption method, but in this process the gasoline must be separated from the liquid used to absorb it from the gas, and this introduces an extra step in the process. This is generally done by distillation.

By far the greater majority of recovery plants use a combination of the two first methods, compression and refrigeration, which process takes advantage of two other physical properties of gases or vapors. When a gas is compressed the work done on it raises its temperature, which is the principal on which combustion is obtained in Diesel engines. Then again, when a gas under pressure is allowed to escape or, in other words, expand, it absorbs heat and consequently chills whatever surrounds it. This is the way ammonia gas is used in a refrigeration plant.

When a casing-head gasoline plant is put into operation in an oil field, the gas is collected by means of pipe lines leading to the various

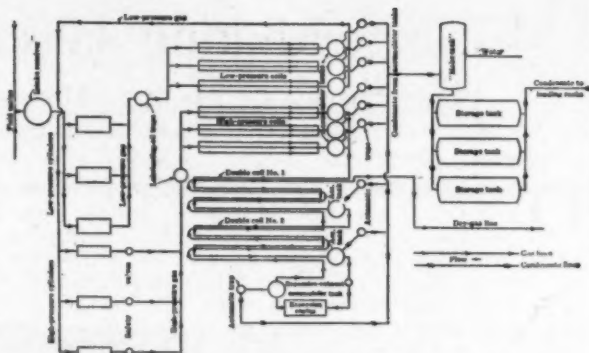
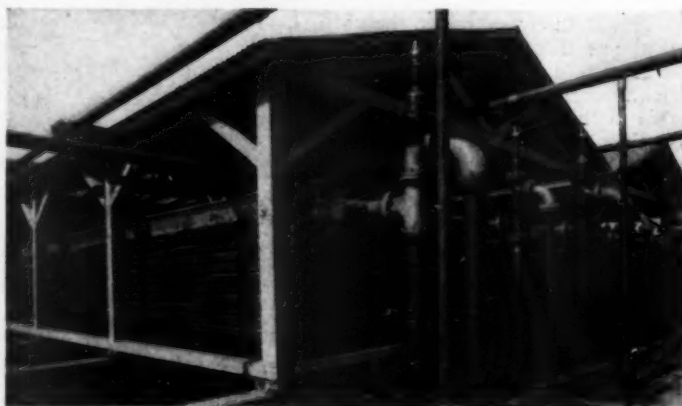


Diagram showing general layout of a plant and the course followed by the gas and gasoline through the apparatus

wells. As the natural gas and crude oil are found intermingled in the same strata of sand, and escape via the same route, it is only natural to expect that there would be a considerable quantity of the gas carried along by the oil in the form of small bubbles. This is exactly the case in many instances, and where it does occur the oil is run through separators where the gas is given an opportunity to separate from the oil.



It is in such coolers as these that the gasoline condenses and separates from the natural gas. These coolers drain into the accumulator tanks where the gasoline is collected and sent under pressure to storage tanks



The end of the process. A group of blending tanks where the gasoline is blended with naphtha to reduce its gravity and render it less volatile

After the gas is brought to the extraction plant it is first run through a separator or trap to collect any oil or water which it might carry and is then piped to the low-pressure compressor. From the compressor the gas, under a pressure of 40 or 50 pounds per square inch, now quite warm, is run through coils of pipe cooled by running water over them. As the gas leaves the cooling coils it is run through accumulator tanks where from fifteen to thirty per cent of the total yield of gasoline separates out and is drawn off by automatic traps and piped to storage tanks.

From the accumulator tanks the gas is piped to the high-pressure compressors. It then is again led through cooling coils and accumulator tanks where more of the gasoline is collected. As this part of the operation has separated all of the gasoline that can be obtained by compression, the next step is treatment by refrigeration.

As the gas leaves the high-pressure accumulators it passes through double coils. That is, one pipe within another. It is led first through

(Continued on page 47)



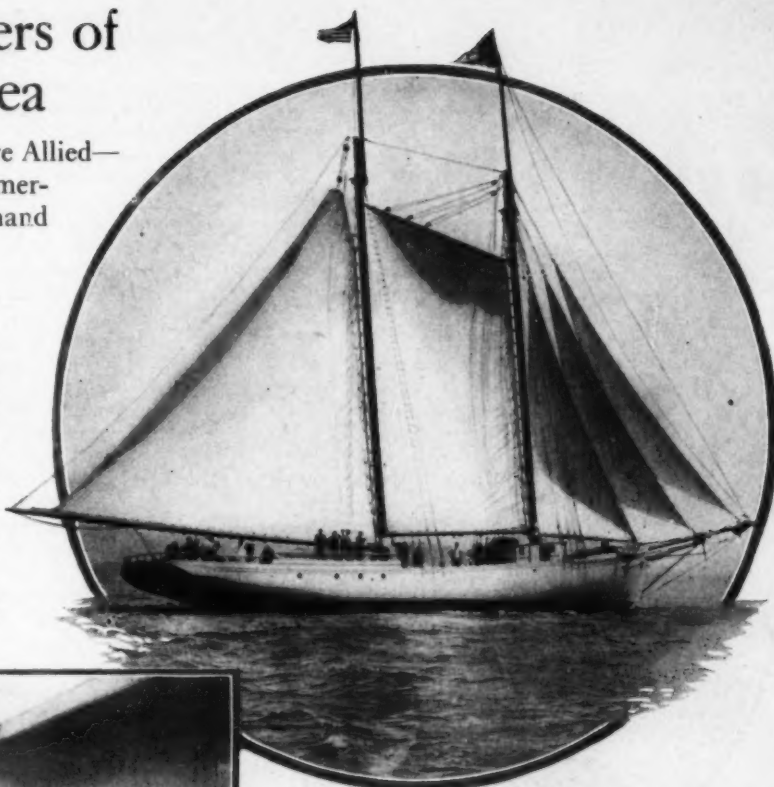
# Motor Schooners of the South Sea

Where Romance and Trade Are Allied—  
American Built Boats and American Motors in Great Demand

By Charles J. Belden

NOT a little romance is attached to the steadily increasing fleet of American-built auxiliary trading schooners that ply among the islands of the South Seas. Many a tale of romantic adventure has had its setting in these tropical waters, and even in this prosaic day and age we are not infrequently treated to a newspaper story from these quarters that harkens back to the days of Captain Kidd.

The early trading among the islands of the Pacific was not unlike



*With a slight breeze in open water, the auxiliary power is dispensed with*



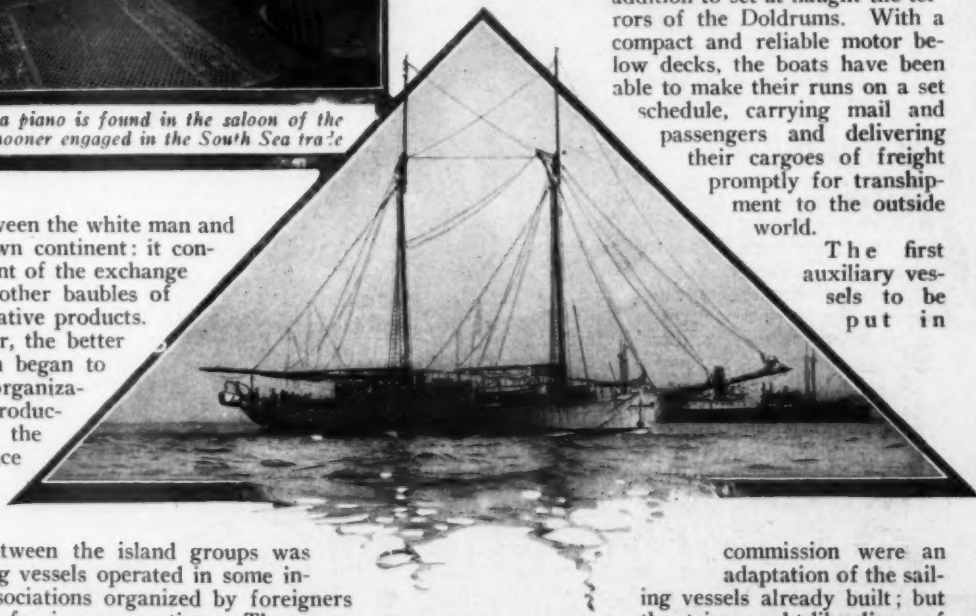
*Even the luxury of a piano is found in the saloon of the modern auxiliary schooner engaged in the South Sea trade*

the early trading between the white man and the Indian of our own continent: it consisted to a great extent of the exchange of "fire-water" and other baubles of civilization for the native products. Before long, however, the better effects of civilization began to be felt through the organization of the islands' productiveness, and under the white man's influence a systematic commercial trading was built up.

Communication between the island groups was maintained by trading vessels operated in some instances by native associations organized by foreigners and in some cases by foreign corporations. These vessels, of course, depended entirely on sail power as a means of propulsion and as a result their trips were long and irregular. Between the reef ridden harbors and the

calms of the Doldrums there were many discouragements in the path of the windjammer. It remained then for the gas engine to provide a means for handling these craft among the treacherous coral reefs and land-locked harbors, and in addition to set at naught the terrors of the Doldrums. With a compact and reliable motor below decks, the boats have been able to make their runs on a set schedule, carrying mail and passengers and delivering their cargoes of freight promptly for transshipment to the outside world.

The first auxiliary vessels to be put in



*A typical trading auxiliary schooner proceeding to sea under motor power*

commission were an adaptation of the sailing vessels already built; but the trim, yacht-like lines of the modern trading schooner bear little resemblance to the old time windjammer. In



*A three-masted trader equipped with twin 110 h.p. engines*

order to secure maximum efficiency of propeller, the hull design must incorporate the use of power as well as sails. The accompanying sketch shows the typical arrangement for a medium-sized schooner. The larger vessels are a good deal more elaborate, being provided with well-fitted saloons as shown in the photograph, comfortable officers' quarters, bathrooms, and other conveniences.

A considerable number of these South Sea traders have been built in the shipyards at the larger ports in the islands, but with the increased war-time necessity for them, it has been found that the yards of the Pacific Coast could turn them out to better advantage.

The smaller type of trader is ordinarily a vessel of about 80 feet in length and 20-foot beam. The hold is unobstructed through the entire length except for the small space needed for the engine-room. Copra is the cargo that is principally handled. The American heavy-duty, slow-speed commercial engine has proven so reliable and efficient in the hands of native engineers

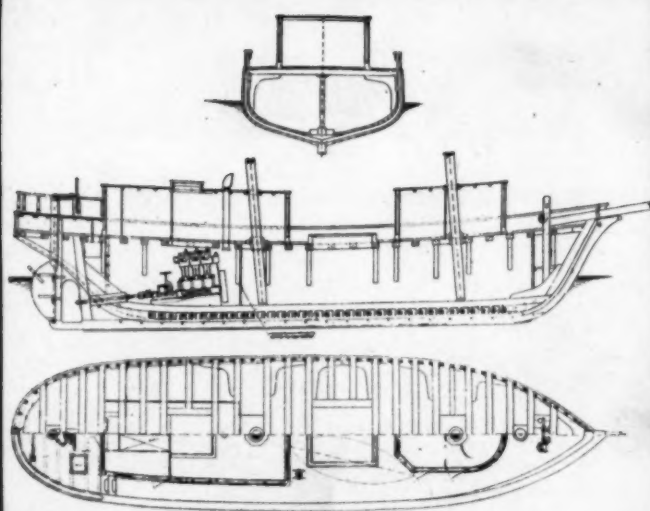
that the idea of supplementing sail power with oil power has rapidly gained favor even in the slow moving minds of the islanders. The engines of 80 to 125 h.p. that are usually installed, provide sufficient power for speeds of seven to nine knots. In the larger boats of 180 to 200 feet in length, twin engines of 100 to 150 h.p. are used. A small auxiliary engine for lighting and pumping purposes is nearly always included in the installation.

Kerosene is the fuel most readily obtainable throughout the islands and an engine that will operate on this fuel possesses distinct advantages in the eyes of the native owners and operators. Gasoline and distillate may also be obtained, but on account of the restrictions placed on their transportation, these fuels are not always available.

These heavy-duty motors operating so successfully on kerosene are not only a product of American factories but the greater majority of them are built on the Pacific Coast where the manufacturers are in constant touch with the latest developments in the commercial boat field. They are the product of years of careful study of the requirements of a reliable motor for the fishing boats and tugs of the coast.

The vessels, too, are in a way the result of the untiring efforts of the naval architects to produce and develop to their present high standard of efficiency the thousands of commercial motor boats that make up the finest fleet to be found anywhere.

Taken as a whole the commercial motor boats of the Pacific are the finest example of their kind in the world. Each type has been developed and refined until at the present time the construction has been standardized to such an extent that all motor boats engaged in any one line of work differ only a little in size and minor de-



*Forward section, profile and plan typical of the recent type auxiliary trading vessel for the Pacific trade*

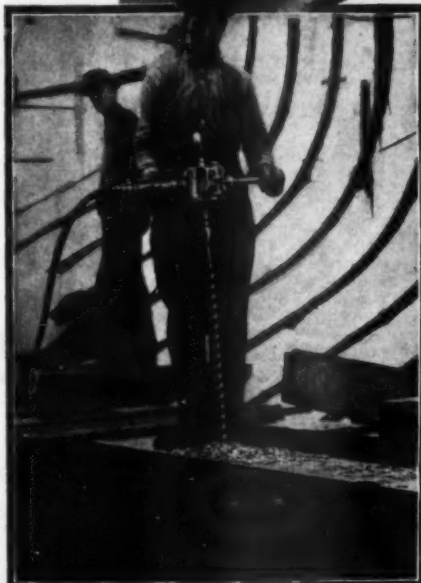
tails. This is as true of the auxiliary trading schooners of

the South Seas as of the cannery tenders, fishing boats, and tugboats of the northern Pacific.

# New Tools for Old Tasks



*Even the time honored caulking mallet has given way to the new air tool with its many hundreds of strokes per minute*



*Boring holes through large timbers is now quickly and easily done with an air driven auger*



*Of all the too's used in ship building the air hammer is without question the most useful. It will drive spikes or treenails or head up rivets many times faster than is possible by hand work. By changing the bit the same tool can be used for cutting or trimming steel work in much the same manner as a cold chisel is used*

Photographs by Publishers Photo Service





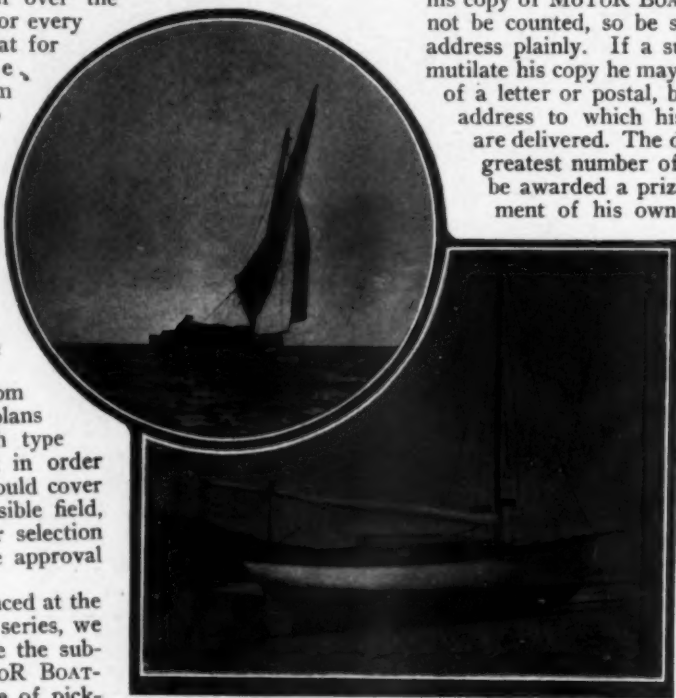
# My Ideal Runabout

A Summary of the Ten Designs Which Have Appeared in MoToR Boating—  
Subscribers Now to Select Best Design—A New Series to Start in February

THE Ideal Runabout Series which has been appearing in MoToR BOATING since last February has proven even a greater success than the Ideal Cruiser series. We have been literally deluged with plans from all over the country. Plans for every type of small boat for every purpose. Some were from boatmen who traverse the open waters of the Atlantic Coast while others were men who must confine their boating activities to the lakes and rivers of the inland states.

We selected from these scores of plans the best of each type or style of boat in order that the series would cover the broadest possible field, and we hope our selection has met with the approval of our readers.

As was announced at the beginning of the series, we are going to give the subscribers to MoToR BOATING the privilege of picking the winning design. Each subscriber is entitled



An auxiliary in which are combined the fine qualities of a sailboat with the convenience of a motor boat

to one vote. He should indicate his preference by marking a cross before the name of boat on the ballot printed on this page, and mailing it to the Editor. Ballots on which the subscriber's name and the address to which his copy of MoToR BOATING is sent are not given will not be counted, so be sure and write your name and address plainly. If a subscriber prefers not to cut or mutilate his copy he may write us his choice in the form of a letter or postal, but must give his name and the address to which his copies of MoToR BOATING are delivered. The designer whose plans receive the greatest number of votes before February 1, will be awarded a prize of \$75. worth of boat equipment of his own selection.

Should two or more designs receive the same and an equal number of votes so that a tie would be created for the first choice, then instead of dividing the \$75. worth of boat equipment between the designers of the tie boats, MoToR BOATING will present \$75. worth of boat equipment to each designer.

Beginning with the February issue MoToR BOATING will publish each month the plans and descriptions of the best designs submitted for the Ideal Auxiliary Series. Like the Ideal Cruiser and Ideal Runabout series the designs submitted for this

(Continued on page 47)

## Vote for Winner of "My Ideal Runabout" Series

Every subscriber for MoToR Boating is earnestly requested to indicate his preference for one or another of the Ideal Runabouts that appeared in the series just completed. Each set of plans that appeared in the series represents a boat that is ideal for his purpose and locality in which the designer intended it should be used. Some of these runabouts were completed and in use before the plans were published and without doubt the coming season will find many more boats that were built from the plans published in this series.

On the page opposite will be found the outboard profile and arrangement plans of the ten runabouts. These plans have all been reduced to the same scale so that the reader may compare their various merits at a glance.

Each subscriber is entitled to but one vote, and they should be careful to give the address at which their copy of MoToR Boating is received. Votes must reach the Editor on or before January 31. The result of the balloting will be announced in the March number of MoToR Boating.

## Ballot for the Ideal Runabout Contest

(Vote by placing a cross at the left of the boat's name)

Vote Here	Name of Boat	Length	Issue Published
.....	Tuna	27 feet	February
.....	L'Allegro	25 feet	March
.....	Hike You	20 feet	April
.....	Zora	28 feet	May
.....	Goblin	20 feet	June
.....	Sandpiper	24 feet	July
.....	America	21 feet	August
.....	Magnet	21 feet	October
.....	Curlew	22 feet	November
.....	Panther	20 feet	December

Name of subscriber.....

Address of subscriber.....

This ballot must be in the hands of the Editor of MoToR BOATING, 119 West 40th St., New York City, on or before January 31, 1919.

Votes received from persons or readers other than regular subscribers will not be considered. Subscribers on the books as of January 1, 1919, as well as new subscribers whose subscriptions are received prior to February 1, 1919, may vote.

## A New Series of Plans—"My Ideal Auxiliary"

Beginning with the February issue of MoToR Boating a new series of designs will appear along lines similar to the Ideal Runabout. The new series will be called "My Ideal Auxiliary." Each issue will contain a complete design, including outboard profile, arrangement plans, sections, construction details, full set of lines, and a table of offsets for an auxiliary.

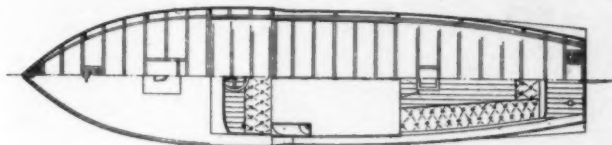
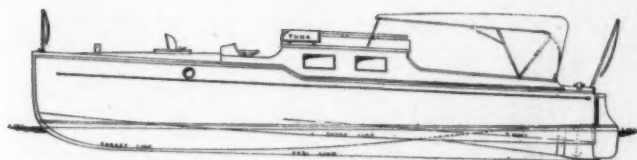
As in the previous series, the plans and descriptions for "My Ideal Auxiliary" must be submitted by amateurs. Anyone interested may submit plans for "My Ideal Auxiliary" series. There is no limit to the size, speed, type or rig.

Designs may be submitted any time after December 1, 1918, up to May 15, 1919. The drawings must be in ink on white paper or tracing cloth but may be to any scale. A description of not over 2,500 words should accompany the plans.

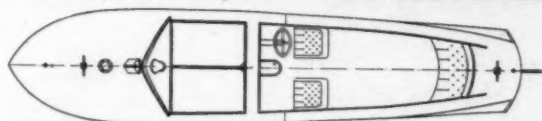
The description should not go too far into building details as it is impossible to do justice to such a broad subject in a few words. It is important that the figures given in table of offsets be correct and care should be taken to check them.

# Vote for the Best Runabout

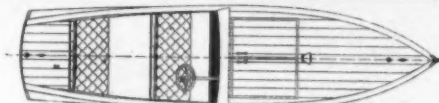
All of the Ten Ideal Runabouts Which Have Appeared  
in MoToR BoatinB Scale— $\frac{1}{8}$  inch Equals 1 Foot



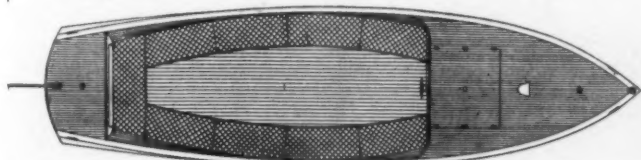
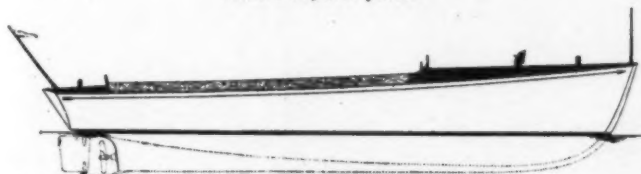
*Tuna, a 27-footer*



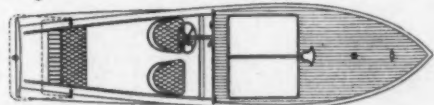
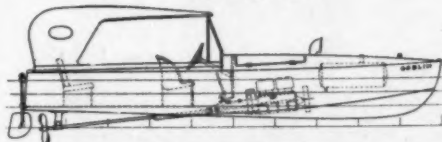
*L'Allegro, a 25-footer*



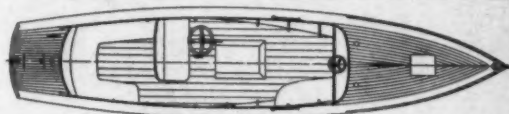
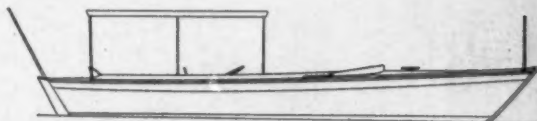
*Hike You, a 20-footer*



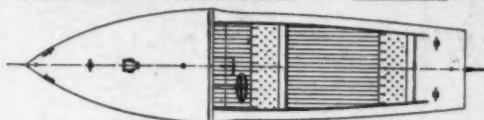
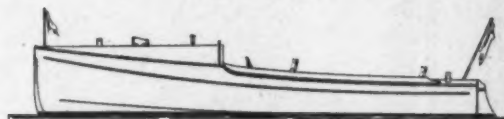
*Zora, a 28-footer*



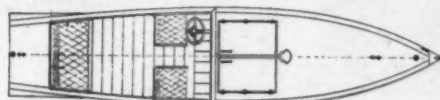
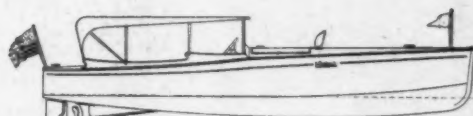
*Goblin, a 20-footer*



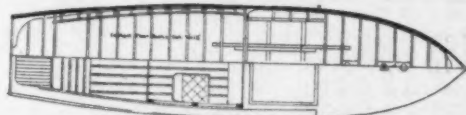
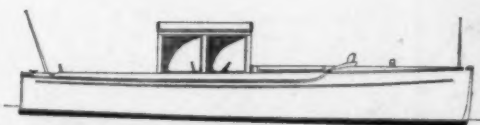
*Sandpiper, a 24-footer*



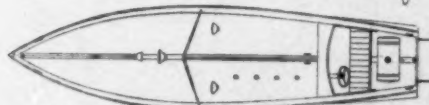
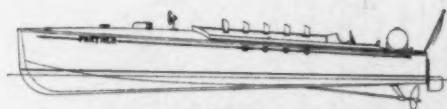
*America, a 21-footer*



*Magnet, a 21-footer*



*Curlew, a 22-footer*



*Panther, a 20-footer*

## The Boat Which Came 5,000 Miles to Keep the U-Boats Away from New York—and Her Commanding Officer



Photograph by Lerrick

making. The performance of these wonderful little ships ranks with the famous trip of the Battleship Oregon in the days of the Spanish-American war. Not a moment of engine trouble was experienced and not a boat was delayed on account of repairs. S. C. 293, shown in this illustration, was one of the Pacific Squadron to make the trip. Her record was among the best and she received the coveted "E" for showing the greatest efficiency. S. C. 293 was in charge of Ensign A. H. Middleton of Seattle, Washington. He is shown taking a bearing on the pelorus



When the submarine menace was at its height the Navy Department decided to rush overseas a number of submarine chasers which were doing duty on this side of the Atlantic. To replace these boats, a squadron of chasers built on the Pacific Coast and then on duty off the States of California, Oregon, and Washington were ordered to proceed at full speed for New York. The run which these chasers made on their trip down the Pacific, through the Panama Canal and up the Atlantic Coast to New York was as full of thrills and excitement as it was epoch



# SMALL MOTOR BOATS

## Their Care, Construction, and Equipment

### A Monthly Prize Contest Conducted by Motor Boatmen

#### Questions for the March Issue

1. Will long distance racing for cruising boats be revived when motor boating regains its normal activity and state reasons for your belief.

*Suggested by A. O. G., Portland, Me.*

2. Give in detail, the procedure for fitting new piston rings correctly, not alone the installation, but methods of obtaining correct fitting

at the sides, face and joint to eliminate possible sources of gas leakage. Illustrate if possible.

*(Suggested by G. A. L., Washington, D. C.)*

3. Have you had any luck in removing carbon by means of injecting water into the cylinders? If so, tell how you work it.

*Suggested by F. T. L., New York, N. Y.*

**E**VERY reader of *MoToR BoatinG* is urged to participate in the Prize Contest, not only in submitting answers to the questions printed, but to suggest questions that will be of interest to motor boatmen. The object of the Prize Contest is to provide a means for the exchange of ideas among motor boatmen and to accomplish this we invite everyone interested in the subject to contribute to the questions. We also invite discussion of the points brought out in the printed answers.

## Make the Yacht Clubs Attractive to New Members

Answer to the First Question in the November Issue

*What is likely to be the future of our yacht clubs after the war and can any steps be taken by the older members to insure a renewal of club activity when victory has been won?*

### It Is Up to the Membership Committee

*(The Prize-Winning Answer)*

**A**LL but a few of the smaller yacht and motor boat clubs have apparently weathered the period of depression incident to the late War and although their active membership has been temporarily almost wiped out by calls to the colors, the older men have often continued the club routine, but necessarily in a more or less curtailed form. Of course no one will deny that the sport of motor boating has been hard hit by the War. The large fleets of former years had practically disappeared during the last season and only a few scattering cruising boats have occupied their accustomed moorings. It may be some consolation for us to realize that all the other out-of-door pastimes have suffered in like proportion. That the power to "come back" strongly still exists in latent form is the unhesitating judgment of those at the head of the leading boating organizations.

Those clubs which have maintained their clubhouses and a semblance of their regular organization should experience little difficulty in gathering around this nucleus the members who return from overseas, from the ships or from the training camps. A resumption of regular monthly meetings, if these have been temporarily discontinued, and renewed activity on the part of the entertainment committee is almost certain to build up during the coming winter a satisfactory attendance at the various club gatherings.

It would be advisable for the membership committee to plan and carry through a vigorous campaign to bring in new members, particularly young men who have served in the Navy or the Coast Patrol. These men should have brought back with them a lasting love of the sea, although likely enough winter patrol duty in the north Atlantic may have lost its appeal.

Clubs which loaned their clubhouses for Government purposes "for the duration of the War" will presently find themselves once more in possession of their property and after the familiar quarters are refurnished and made suitable for club habitation the members will doubtless begin to drop in as usual. Activity on the part of the secretary in getting in touch with the returning members will count for much in bringing back those who have lately been represented merely by a star in the club's service flag. He should see to it that membership blanks are placed in the hands of every active member with the request that each man make an effort to bring in one good name at each meeting.

Of course attractive entertainments should be arranged at intervals during the winter season. These may be either of a social or an educational nature and it is worth mentioning that a few "eats" never go amiss at these club gatherings. If the local newspapers can be supplied with a readable write-up of each meeting it will do no harm.

The one thing necessary to put the clubs back on their feet is earnest work and interest on the part of the officers and committees, seconded whole-heartedly by the members themselves. We can scarcely expect to have our club fleets filled up by next summer, but with proper encouragement and judicious publicity the club's membership should be in a healthy state of growth and new boats will follow as a matter of course.

A. O. G., Portland, Me.

### Revive the Good Old Days

**W**HAT is likely to be the future of our yacht clubs after the war and can any steps be taken by the older members to insure a renewal of club activities when victory has been won? Since this question has

#### Rules for the Prize Contest

**A**NSWERS to the above questions for the December issue addressed to the Editor of *MoToR BoatinG*, 119 West 40th St., New York, must be (a) in our hands on or before January 25; (b) about 500 words long; (c) written on one side of the paper only; (d) accompanied by the senders' names and addresses. The name will be withheld and initials used.

**Q**UESTIONS for the next contest must reach us on or before January 25. The Editor reserves the right to make such changes and corrections in the accepted answers as he may deem necessary.

The prizes are: For each of the best answers to the questions below, any article or articles sold by an advertiser advertising in the current issue of *MoToR BoatinG* of which the advertised price does

not exceed \$25, or a credit of \$25 on any article which sells for more than that amount. There are two prizes—one for each question—but a contestant need send in an answer to only one if he does not care to answer both.

For answers which we print that do not win a prize we pay space rates.

For each of the questions selected for use in the following month's contest, any article or articles sold by an advertiser advertising in this issue of *MoToR BoatinG*, of which the advertised price does not exceed \$5, or a credit of \$5 on any article which sells for more than that amount.

All details connected with the ordering of the prizes selected by the winners must be handled by us.

been chosen for discussion it seems as if the great war is over and victory has already been won. A new era is dawning on the horizon, and the romance of the Seven Seas is about to be revived. The future for the yacht clubs at present seems particularly bright. As many landmen have had their first taste of the salt, during the war, there will always linger in the majority of cases the love for the sea. And what will be the result? Increased memberships for the clubs, and a lot of the former tars will become proud owners of yachts of all types, classes, and sizes.

As for older members to insure club activity, it will mean only the revival of the good old days. Dances, smokers, talks, an annual cruise, week-end cruises, shore dinners, clam-bakes, races, gala days, water carnivals, moonlight excursions, and life will seem worth living for once more.

As advancement has been rapid for yachtsmen who have joined the Colors, it may be necessary for those who had to remain at home to make the clubs more attractive to them, especially during the winter months. For this purpose there could be classes in boat building, advanced seamanship, and navigation, and any other subjects that tend to boost the sport. Lectures by the members who were in active service, telling of their experiences and adventures in running down the subs. This would prove interesting for the older members, and as many of the boys have gained a lot of practical experience it would probably prove valuable to the other members.

E. W. N., Boston, Mass.

### *Prepare a Real, Live Schedule and Stick to It*

**A**S victory has already come to Allied arms, the future success of the yacht clubs of the country is assured, with an effort on the part of the older members.

It is said that "absence makes the heart grow fonder." Surely the seasoned motor boat "salt" returning from France is going to take up with renewed vigor his interrupted activity in the King of Sports—whether his past ambition has been along racing or cruising lines.

The thousands of boys returning from the Navy, many of whom never before had an opportunity of appreciating the sea in all of its moods, will feel that on land there is something missing and that a motor boat is that "something."

The builders and manufacturers, after a period of war work, will again readjust themselves on a peace basis. They will present their products through the medium of the advertising columns of the yachting magazines. Sales and deliveries will be accelerated. The proven success of boats, engines, and accessories in war work will appeal to even the most skeptical, the absolute reliability of the motor boat as a real pleasure proposition, besides giving an added sense of security.

Two of the Bayonne yacht clubs that have lost a number of members due to the war, are already making preparations for euchres, pig roasts, dances, etc., during the winter months, and each present member is to bring a possible future member and boat owner. These affairs are to be followed up by others as the season opens, and will not fail to stimulate interest

and bring in new blood. Special endeavors will be made to attract the man who has served in the Navy.

In conclusion, the motor boating situation never held the promise of better prospects than at present, and if the yacht clubs of the country emulate the example of the Bayonne clubs, preparing a real, live schedule, and sticking to it with coat off and sleeves rolled up, there should be no miscarriage in the revival of greater activity than ever before. J. W. K., Jersey City, N. J.

### *Make the Clubs Attractive*

**V**ICTORY has been won! What is going to be the future of our yacht clubs? What are we going to do to give it new and rejuvenated life? These are the questions now entering into many a club member's mind, but isn't the person that attempts to answer the first question putting himself in the class of the prophets? It is a question that will have to be answered generally rather than specifically. The future of any individual club depends entirely on the efforts and the personality of its own members; while the future of yacht clubs in general, particularly the smaller ones, will depend very largely upon public opinion among boat owners.

During the reconstruction period we are all going to be busy, but it won't be necessary to work with such feverish haste and we are going to be able to take a little more time to ourselves than we have in the past. The motor boat enthusiast is still one, and the thousands of young men who will be discharged from the Navy will return home with a strong taste for the salt. The yacht club made attractive for these younger men by the older members now is the club that will grow and become a real factor in the community. One of the lessons we have learned in the last two years is to serve.

The second great lesson we have learned recently is to save. It does not seem likely that Uncle Sam is going to scrape all the small craft that he has built to beat the enemy. They will probably be sold, and sold comparatively reasonably too. The purchasers are going to become club members if they are not already. The older members of clubs should now get together and provide for the reconstruction period racing toward us.

The definite steps that the older members should take now is to plan for the following:

- 1—An active campaign for new young members.
- 2—Establishment of an efficiency committee, providing prizes during the season for efficient operation as well as speed contests.

3—Arrangements should be completed for weekly events, including races, short and extended cruises. Have something doing every week that the busy man as well as the man of leisure can have an interest. Don't forget the ladies.

4—Yachting is more or less of a luxury—keep its cost down so as to avoid criticism for at least the next year or two.

Another consideration is the sale of new boats to men not familiar with boats or boating. Would not the boat builders be far better off and have more satisfied patrons if they sold their product complete, not a hull and engine, and then leave it to the purchaser to supply the rest of the equipment, and at an expense he did not figure on in the first place?

S. R. D., Brooklyn, N. Y.

### **MOTOR BOATING PRACTICAL HANDBOOKS**

In Six Volumes, contain the best of the Prize Contest answers for the last eight years. Each volume contains nearly 200 pages, is fully illustrated, and is complete in itself.

- Volume I—Practical Motor Boats and Their Equipment.
- Volume II—Practical Motor Boat Building.
- Volume III—Practical Things a Motor Boatman Should Know.
- Volume IV—Practical Marine Motors.
- Volume V—Practical Motor Operation and Maintenance.
- Volume VI—Practical Suggestions for Handling, Fitting Out, and Caring for the Boat.

#### **Handbooks Now on Sale**

The new post office regulations have made it necessary for us to withdraw the offer of sending the new Motor Boating handbooks to our subscribers with subscriptions of one, two, or three years. However, from now on the books will be placed on sale and they may be obtained upon application or will be sent upon receipt of \$1.25 per volume, or \$6 per set of 6 volumes.

The edition is limited so it would be well to send your order for the handbooks as early as possible to—Editorial Department, Motor Boating, 119 West 40th St., New York City.

# Straightening a Bent Crankshaft

Answers to the Second Question in the November Issue

*How may an engine crankshaft be tested for alignment and what simple straightening tools and methods have you devised to put it into serviceable condition?*

## A Home-Made Testing Stand

(The Prize-Winning Answer)

**B**EST results in bringing a sprung shaft back to truth may be had through a lathe, centering gauge and heavy screw press. The man who has access to such equipment hardly needs instruction in the method of straightening shafts of any kind but the motor boatman is often required to perform such work in isolated places or where special tools are not available. In such cases the herein described method for testing and straightening a crankshaft may be utilized.

A piece of heavy sound planking is first procured for the base and to this are securely nailed two hard wood V blocks as shown in Fig. 1, for supporting the shaft at the two outer bearing points. Opposite the center bearing a support made from  $\frac{7}{8}$ -inch board is mounted for holding the pivoted centering arm. This arm is made from a piece of  $\frac{1}{2} \times \frac{1}{8}$ -inch iron about 16 inches long. A hole for a small wire nail is drilled  $1\frac{1}{2}$  inches from one end while the other end is pointed. The arm is mounted as shown and a steel scale or even a piece of white cardboard is fastened with sealing wax to the board under the pointed end. Oil should be applied to the V blocks.

As the lever has a ratio of about 10 to 1, a spring of .002 may be readily noted as the shaft is rotated. When the high side is found it should be marked with chalk. The shaft may then be blocked up with hard wood blocks, under the outer bearing points and with the chalk mark on the top side. The place for doing this should be near the side of a wooden building as it will then be easy to fulcrum the piece of timber which is used as a lever for springing back the shaft as shown in Fig. 2. Great care should be exercised in doing this part of the work and frequent tests should be made as the straightening operation proceeds. With patience, however, the shaft may be trued until the movement of the point is not perceptible, which means that it is less than .001 out.

J. F. C., Meriden, Conn.

## Balance Over Straight Edges

**W**HEN a crankshaft main bearing breaks or burns out, the resultant trouble will be most likely a bent crankshaft unless the danger is detected and the motor stopped in time.

After experiencing a difficulty of this kind or when the motor knocks preceptibly from some undiscovered cause, the crankshaft should be removed and tested on steel straight edges for alignment.

This test consists of placing the straight edges on some flat and level surface and placing the main bearing sections on the straight edges.

A true crankshaft should balance, or in other words, should not roll when tried in any or all positions. The slightest rolling tendency indicates a bent shaft, and to detect the position of this bend, without resorting to the

lathe, a third straight edge of the exact width of the other two is required. A thickness gauge or feeler is the only other requirement to determine the place and position of the bend.

Having determined the low side of the bent shaft by placing two of the edges on the bearings at the extreme ends of the shaft, turn the shaft over to bring this place uppermost and slide the third straight edge under the center of the shaft. Now with the thickness gauge the amount of bend is measured first at one bearing and then the next to find the point where the maximum bend occurs.

Unless an arbor press is at hand a simple prying bar of wood is the next best expedient. Place the crankshaft through a couple of separated beams and use a long substantial wooden bar for prying the shaft back into alignment. This work is more of the "cut and try" method that is to say bend and then test on the straight edges.

Each time the shaft is pried back each bearing is tested out and the position of maximum bend noted and chalk marked. Not a great amount of skill is required to do this work, but patience, a perfectly flat plate, preferably a face plate, and reliable straight edges, are the main points. Go slow with the bending at first, until you find the amount of pressure that is required with the prying bar to bend the shaft.

It will be found that the shaft will have to be sprung a quarter of an inch or so in the opposite direction from the bend in order to straighten it. Do not expect to find the shaft straight after the first or even the second attempt.

If it is possible to secure a heavy automobile jack or a small screw-jack, the wooden pry bar can be dispensed with. It is possible to control more closely the pressure applied and the amount the shaft is sprung with a jack.

G. A. L., Washington, D. C.

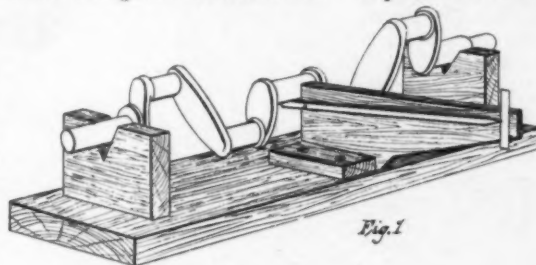


Fig. 1

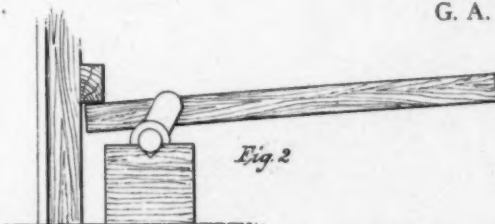


Fig. 2

J. F. C.—The location of the bend is found by turning the crankshaft in the V-blocks and then straightened by springing with a lever

## Testing Alignment and Truing Crankshaft

**A** SPRUNG crankshaft is about the worst accident, short of wrecking, that can happen to a motor. The cause is generally the result of poor workmanship in overhauling, seldom in building, or gross inattention on the part of the operator. The crankshaft of a motor is designed with ample factor of safety for any overload and unless there is a flaw in it it will not be thrown out of alignment in operation when the bearings are properly aligned and adjusted.

Badly worn and improperly adjusted bearings will



throw undue stress on some part of the crankshaft which will give eventually if the motor is operated in this condition. When the crankshaft is sprung the connecting-rod bearings on the crankpin and wrist pin are thrown out of parallel and undue wear on these parts will result.

The first indication of a sprung crankshaft is overheating of the main bearings, which no amount of lubrication will stop, and a general stiffness throughout the motor, caused by friction.

When this trouble is apparent the only sure method is to take down the motor and remove the crankshaft. Carefully center the shaft in a lathe, or if a lathe is not available, revolve it in two V-block bearings, testing the alignment with a piece of chalk and a steel square. With the V-blocks out of wind on a base try the center bearing with the chalk. Hold the square at right angles to the crankshaft so that when the shaft revolves, the crankpin just touches the square. On the base draw a line through the point found with the square parallel to the crankshaft. With a true crankshaft all of the crankpins should touch the square when it is held in the same rotative position to the line and pins.

If any irregularity is found mark the off spot and take the crankshaft to a machine shop. The straightening is a job for a shop and a good mechanic. Amateur work with improvised equipment cannot produce results equal to the shop job and should be attempted only as a last resort.

In case you must tackle the job yourself you can make a straightening gig from hard wood or iron which will force back any ordinary size crankshaft. Secure a stout oak bed plate, two bearing blocks, two steel plates, two heavy bolts, having a long thread, a jack screw and miscellaneous bolts or lag screws. The two bars must have holes in either end to receive the bolts.

First securely fasten one bar across the under side of the bed plate at the center. For each of the end bearings make good husky hard wood blocks to fit the shaft, allowing clearance so that the shaft may revolve. A special

head for the jack to fit the sprung part of the crankshaft will be necessary, then you are ready for the job.

Place the crankshaft in the bearings with the spot marked for out up. A little ingenuity in placing blocking to hold the shaft from moving and to keep the pressure from undesirable parts will enable you to apply the pressure just when necessary.

Adjust the jack between the upper plate and the head and carefully apply the pressure. By blocking and adjusting the angle of the cross plate the screw may be made to push any part in any direction. The straightening must be done with the utmost care, taking very little at a time and revolving the shaft to note the result. "Patience is a virtue", and is necessary to secure a serviceable job. Work slowly and avoid going too far as undue bending may weaken the metal causing a reoccurrence of the trouble. Heating the crankshaft is not advisable in amateur methods.

There is considerable work to be done after the crankshaft is trued. The main bearing must be realigned and scraped in and the connecting-rod bearings should also be refitted to insure the parallelism of the crankpin and piston-pin bearings.

When the connecting rods are being fitted with the crankshaft in place in the crankcase a steel square may be used to test for parallelism. The top of the crankcase is planed or milled true to the centerline of the crankshaft, and if the piston side is at right angles to the top of the base it is reasonable to assume that the crankpin and wrist pin are parallel.

After being overhauled in this manner the motor should be given several hours test run with little or no lead and plenty of oil. After a satisfactory test treat as a new motor until all bearings are well worn in and there is no danger of them becoming heated.

Oil and grease intelligently used are the best mechanics you can employ and it is well worth the price to get the best and avoid trouble and repair bills.

W. B. M., Newburgh, N. Y.



*What a depth bomb did. This photograph was taken by one of the boys aboard a U. S. destroyer and shows a Hun submarine lifted clear of the water by the explosion of a depth bomb dropped from the stern of the destroyer as it crossed in front of the submarine a few seconds before*

# Mixing Water with Gasoline

Some of the Advantages Gained by Introducing Limited Quantities of Water into the Intake Manifold

**W**ATER in the gasoline tank or carbureter will cause trouble as everyone knows. Yet, when water is added to the charge of gas as it enters the cylinder, added in proper proportion, it will help get all the power out of the gasoline and at the same time aid in eliminating carbon troubles. In other words water can be used as a decarbonizing medium.

Some years ago when kerosene motors were in the experimental stage it was found that the injection of a little steam or water with each charge aided the combustion, reduced the obnoxious odor of burning kerosene and gave a more even expansion as the charge was ignited. Nobody at that time even thought of using water with the gasoline motors.

The fuel we get now under the name of gasoline contains gasoline, benzine, naphtha, and more or less kerosene, whereas in the earlier days the commercial gasoline consisted of only gasoline and benzine. Now, if a small amount of water proves beneficial in a kerosene motor, and our present gasoline contains some kerosene, it is only reasonable to assume that water in limited quantity will prove beneficial to the operation of a gasoline motor. Most people who have tried it claim it will.

It is a generally admitted fact among motor boatmen that a badly sooted or carbonized motor can be cleared of most of the carbon by the

It is not definitely known just what chemical reactions take place when the explosive mixture is ignited in the cylinder but several of the products which pass out of the exhaust are easily determined. The elements in the gasoline are almost wholly hydrogen and carbon in chemical combination but not in exactly definite proportions. They vary according to the sources of supply and processes of distillation. The atmospheric air taken in through the carbureter is approximately one-fifth oxygen and four-fifths nitrogen.

Now, as nitrogen is a very inert element most of it passes through the motor unchanged. The oxygen, hydrogen, and carbon combine to form various compounds. Some of the oxygen and hydrogen unite to form water vapor ( $H_2O$ ) while more of the oxygen unites with the



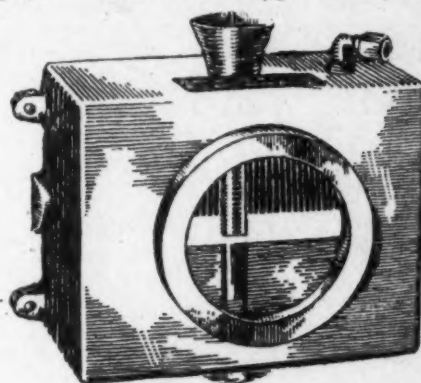
The Wegman device provides a direct connection between the water jacket and intake manifold. The amount of water admitted is controlled by a needle valve and passes through a sight feed

The Deits system consists of a water trap connected to the overflow pipe of the radiator and by a flexible tube to the carbureter intake



introduction of a considerable amount of water through the air intake of the carbureter while the motor is hot and in operation. The action of the water seems to be to soften the deposits of carbon and loosen them from the walls of the combustion chamber.

Even if the use of water accomplished nothing more than loosening the deposited carbon its application would be worth while. Going a little deeper into the subject and studying the probable chemical actions and changes when the charge is ignited it will be found that, theoretically, water will aid the combustion.



With the Esta system only vapor enters the motor. Air is drawn down through a tube to the bottom of the tank and bubbles up through the water, carrying the vapor with it to the manifold and cylinders

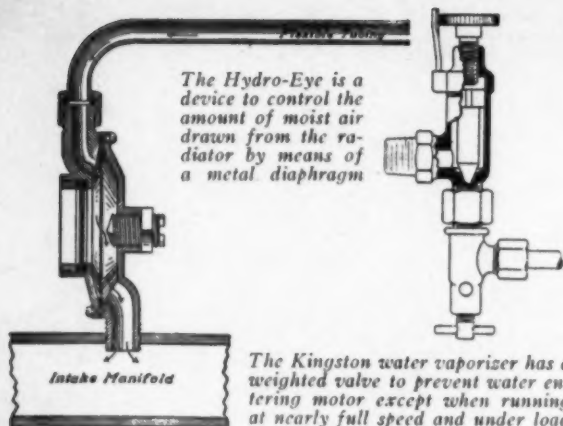


In the water gas system water from an auxiliary tank is fed through an adjustable sight feed and vaporizing coil to the intake manifold as vapor

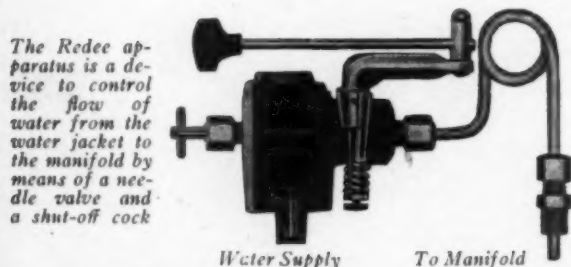
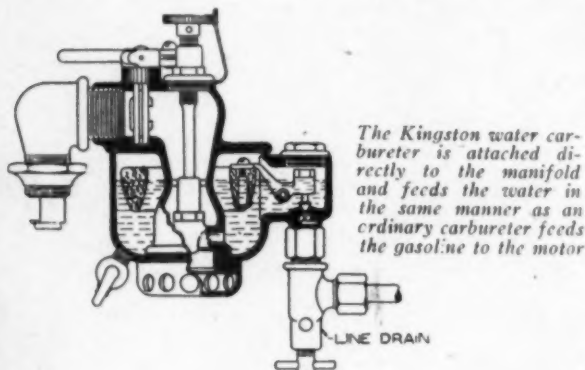
carbon to form some carbon monoxide ( $CO$ ) and a much greater quantity of carbon dioxide ( $CO_2$ ). Undoubtedly most of the  $CO$  unites with the free oxygen and forms  $CO_2$  before the combustion is complete. Some of the carbon is deposited in the combustion chamber as everyone who has had much experience with gasoline motors is well aware.

If the carbureter admits the proper amount of air there is very little or no  $CO$  in the exhaust gases. Of course, the lubricating oil will enter to some extent in the chemical reactions but it acts similar to the gasoline except that it deposits more carbon. As all the products of combustion pass out of the exhaust without further trouble it is only the carbon with which we are concerned.

There are several ways of accounting for the action of water on the carbon. First—when water vapor is brought into contact with heated carbon the tendency is



to form water gas ( $2H + CO$ ) which is the basis of illuminating gas. The reaction is  $C + 2H_2O = (2H + CO)$  which with excess of oxygen forms carbon dioxide ( $O + CO = CO_2$ ) and the hydrogen ( $2H$ ) of the water gas forms water vapor. ( $2H + O = 2H_2O$ .) Another possibility where there is excess of carbon is ( $C + H_2O = CO + H$ ) in which the carbon



monoxide and free hydrogen will unite again with more oxygen and form water vapor and carbon dioxide ( $CO + O = CO_2$ ) and ( $2H + O = 2H_2O$ ). It matters little which set of reactions represent what actually takes place as long as the carbon is combined with oxygen and passes off with the exhaust gases. That is the final result that is sought.

After the kerosene engine builders, the manufacturers of automobile accessories were the next to see the advantages to be gained by adding a little water vapor to the charge of gas before it enters the cylinders. That their efforts met with success is clearly shown by the number of such systems, now on the market.

As these devices were almost all developed for automobile use some of them are rather difficult to apply to a marine motor. They can all be put in three classes. First, those that supply water direct to the intake mani-

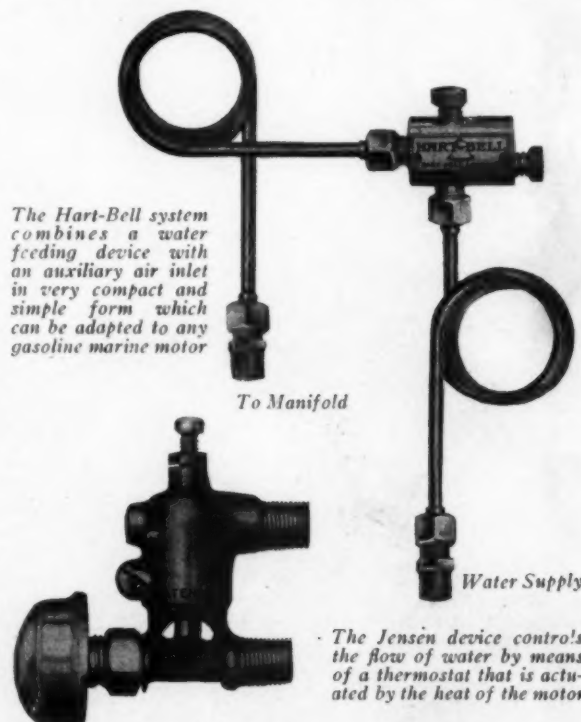
fold. Second, those that have a coil for heating and vaporizing the water before it mixes with the gas, and third, those which feed water vapor obtained from hot water into the manifold. The results obtained from all three methods are practically the same. In any case a boat used on salt water must of necessity carry a small tank of fresh water to feed the device. Salt water would do more harm than good.

Those which supply water directly to the intake manifold are easily applied to marine motors while those that employ a coil for vaporizing the water may have to be modified somewhat for marine purposes. In some marine power plants it is necessary to have quite a length of tube to reach a point on the exhaust line that is not water-jacketed and it is a question whether the vapor will not condense again before reaching the intake manifold.

It is almost impossible to use on a boat those devices which are intended to draw their supply of vapor from the radiator filler of an automobile unless the boat is used only on fresh water and some sort of a dome or trap is provided on the water outlet line from which to draw the water vapor.

The use of one of these devices in connection with an auxiliary air inlet and a stove or heater for heating the air before entering the carburetor would without doubt provide the highest possible economy of operation and fuel consumption. This, of course, assumes that the motor itself is in good condition and perfect adjustment.

Some manufacturers of oil and kerosene marine engines now include as regular equipment on their motors some device to inject water with each charge, and it seems likely that before very long some of the more



progressive gasoline engine builders will follow the same practice, as they are coming more and more to realize the advantages of selling a complete power plant, not an engine to which the purchaser must add several pieces of equipment before his outfit is really complete. Undoubtedly this is one lesson they have learned from the automobile trade to their own benefit and their customers' satisfaction.



# Motor Boat Show a Possibility for 1919

By Ira Hand

**A**LTHOUGH the date for holding a National Motor Boat Show may have to be advanced well into the Spring, it is possible that a huge exhibition of yachts, motors, and other marine equipment dear to the hearts of the amateur "tars" may be staged in New York City in 1919.

At a fully attended meeting of the Executive Committee of the National Association of Engine & Boat Manufacturers held Thursday afternoon, December 12, the question of holding a Show was the chief topic under discussion. With priorities on materials being rapidly lifted and with increased evidence at hand of a large volume of new business, a review of the situation showed that if conditions were found to be favorable, a real peacetime Show might be held. While the builders present at the meeting were representative of the industry from all parts of the country, an expression of opinion will be sought from all members of the National Association and a definite decision will then be made by the Executive Committee at an early date.

President Henry R. Sutphen presided at the meeting and considerable time was given to a general discussion of the trend of the trade. A general tone of decided optimism was in evidence, all of the manufacturers present seeming to feel that the year 1919 is destined to be a remarkable one for the motor boat industry from the standpoint of new business and general prosperity. Problems of the coming period of re-construction, including distribution of labor, the present steel situation, cancellation of war orders, etc., were generally touched upon and it was the general opinion that, while the readjustment to new conditions must needs be somewhat slow, yet the Spring of 1919 would see the builders in the marine industry in this country in splendid shape to properly care for the business that will undoubtedly ensue.

A resolution was passed at the meeting that every possible aid be given the Government through its or-

ganized bureaus in finding employment for discharged men of the service. Steps will be taken through the offices of the Association to place these returning veterans in positions for which they are most suited and forms will be provided through which investigation of the applicant's references and ability may readily be made.

The Committee also reviewed some of the matters of legislation that are now under discussion by Congress, and the Legislation Committee, headed by its Chairman, George F. Lawley, will immediately formulate plans to properly protect the interests of the members of the Association.

The members of the Association will also shortly receive full information regarding standard catalog sizes as decided upon at the National Catalog Conference recently. The size finally recommended after consideration of all the facts was  $7\frac{1}{2} \times 10\frac{5}{8}$  inches. It is claimed that this standard catalog size will produce marked economies in paper, printing costs, and filing.

The next meeting of the Executive Committee is scheduled to be held on Friday, January 10, and at that time a decision will be reached as to the matter of holding a Show in 1919 after answers have been received to the letter that has been sent out by the Association to its members.

John J. Amory, who retired from the presidency of the National Association after fourteen years of continuous service in that capacity since the organization of the Association in 1904, is now first vice-president and chairman of the Exhibition Committee. At a testimonial dinner tendered to him by the members of the Executive Committee at the Engineers' Club Thursday evening, he was presented with a handsome silver table set by his associates on the Committee in grateful remembrance of his untiring devotion to the affairs of the National Association throughout his many long years in office.

## Power Squadrons Perform Wonderful War Work

**T**HE United States Power Squadrons, organizations of motor boatmen located in many of the larger cities on the Atlantic coast and the Great Lakes from Portland, Me., to Chicago, have proven their right to existence and world recognition along the lines stated in their by-laws, namely, that the purposes of the Power Squadrons is to encourage yachting, to establish a high standard of skill in the science of navigation of power boats, to co-operate with the United States Government in matters relating to coastwise navigation, and the qualification of yachtsmen for service in the Navy in time of war.

Over 50 per cent. of the Squadron members went into the Naval service, nearly all of them either enrolling as officers or being raised to an officer's rating as soon as they had a chance to show their worth and ability. Those members who did not enroll remained at home to do all in their power to encourage others to join the Navy and gave unsparingly of their time and money in the preparation of thousands of young men of the country to be of greater value to the military forces.

The Power Squadron Free Nautical Schools, located in many cities and in session five nights a week from the day war was declared until the armistice was signed and

from which over 5,000 young men were graduated in such nautical subjects as deck seamanship, coastwise navigation, piloting, dead reckoning, signalling, astronomical navigation, and first aid work, is but one example of the carrying out of one of the Squadrons' reasons for existence. The instructors in the schools were volunteer Squadron members who received no pay whatsoever for their services.

Many Squadron members were appointed Navigation Inspectors by the Secretary of Commerce and served at one dollar a year. They did much valuable work in assisting the Department in its work and the inspection of motor boats for equipment, over-crowding, etc.

With the ending of the war, the usefulness of the Squadron idea, at least that purpose which declares for training men for the Navy, ceases. However, the Squadron movement has immense possibilities in connection with the coming of a big merchant marine, and the biggest revival of yachting the world has ever known and it is highly probable that some important changes will soon be made in the Squadron by-laws so that advantage may be taken of these opportunities and the

(Continued on page 50)

# How the Diesel Engine Proves In

## PART II

By Herbert Haas

**A**N increased use of material to withstand the greater total pressure in large cylinders merely accentuates the difficulty of cooling the cylinder, the cylinder head, and the piston, and of carrying off the heat fast enough through thick cylinder and cylinder-head walls. Stresses due to unequal expansion and contraction may easily lead to ruptures of vital engine parts, such as cylinder heads, pistons, and cylinders. Successful building of large Diesel engines must therefore be fortified by a great amount of practical experience, particularly in the rational design and selection of casting mixtures with correct chemical and physical properties.

Twenty-four inches in cylinder diameter represents the probable upper limit with air-cooled pistons, and 30 inches with water-cooled pistons, for Diesel engines having a four-stroke cycle.

### ECONOMIES OF DIESEL AND OF EXPLOSION OIL ENGINES

The use of explosion oil engines should be dictated entirely by their over-all economy. Although they are materially cheaper in first cost, they consume considerably more fuel and lubricating oil than Diesel engines, and their fuel consumption at fractional loads increases at a greater rate than does that of Diesel engines.

The difference in economy between explosion oil engines and Diesel engines is due not so much to a difference in thermodynamic cycles as in constructional differences, which decidedly favor the Diesel engines.

If the compression were carried as high in the explosion engine as in the Diesel, the explosion oil engine would show theoretically a slightly higher thermodynamic efficiency than the Diesel engine. The final pressure, when the fuel is burned at constant volume, would, however, be greatly increased above the compression pressure, or to about 60 atmospheres, with an accompanying rise in temperature far beyond that practicable with the materials of construction available. These limitations impose a lower compression pressure on explosion oil engines than on Diesel engines, so as to keep the maximum pressure and temperature within safe limits of permissible engine construction.

Thus with a compression pressure of 150 to 250 pounds per square inch the explosion pressure becomes 270 to 500 pounds per square inch; and with the instant ignition and burning of the previously vaporized oil common to

explosion oil engines, a temperature of 2,300 degrees to 3,150 degrees Fahr. is reached.

The Diesel engine has a higher but more gradually increasing compression pressure (450 to 500 pounds per square inch) which does not subject the engine to sudden shocks, with a resulting increase in temperature from atmospheric to about 1,000 degrees Fahr. The fuel is gradually injected as the piston moves from its top center (inner dead center) downward, the pressure remaining practically constant during the time of fuel admission. With a decrease in load, the time of fuel admission is also shortened, that is, the fuel supply is shut off sooner. Therefore, the increase in temperature due to the burning of the fuel at constant pressure does not exceed

that reached in an explosion engine, notwithstanding the higher compression pressure used in the Diesel engine, and the higher initial temperature caused by this compression. Thus, the temperature in a Diesel engine seldom exceeds 2,600 degrees Fahr., and reaches 3,000 degrees Fahr. only when the engine is overloaded.

If, then, the working cycles of the two types of engines are compared on the basis of compression pressures used, the Diesel engine is found to have a greater thermal efficiency, because it can work successfully with the higher compression pressure. This superiority is confirmed by comparative entropy diagrams.

Whereas in explosion oil engines the efficiency is influenced by the compression ratio alone, in the Diesel engine the efficiency is influenced by the compression and the cut-off ratios, the efficiency increasing with a decrease in the length of the cut-off or constant-pressure line. Thus, at fractional loads, the indicated thermal efficiency of Diesel engines increases, which partly offsets the loss in mechanical efficiency, that is, the increased fuel consumption for performing the internal work of the engine. This accounts for the very "flat" fuel-consumption curve of Diesel engines, which maintain an almost constant fuel economy over a fairly wide range in load. Thus at three-fourths load the increase in fuel consumption per brake horsepower-hour is only 2 to 5 per cent, and at one-half load 10 to 15 per cent, greater than at

full load in high-grade engines, which is in marked contrast with fuel increases in other prime movers. The ability to create higher initial temperatures, aside from increased thermal efficiency, enables the Diesel engine to burn a greater variety of fuels. In addition to the fuel being thoroughly atomized by highly compressed

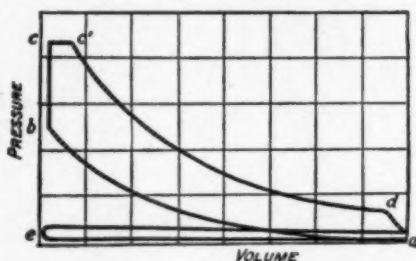


Fig. 3—Pressure-Volume Diagram, Sabathé Four-Stroke Cycle Motor

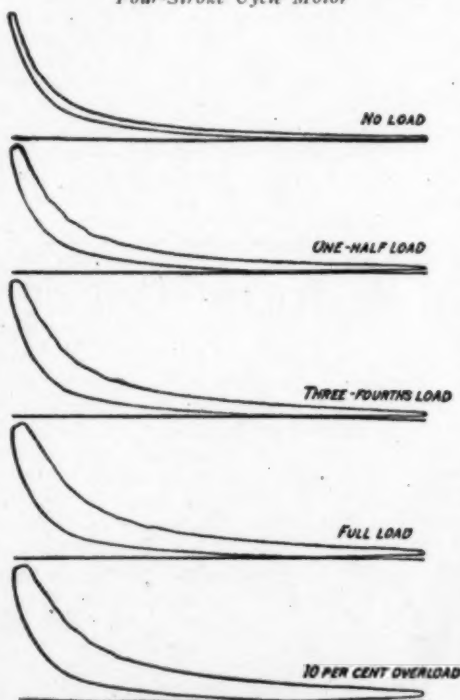


Fig. 4—Indicator Diagrams of a Four-Cycle Diesel Engine

air, the heated oxygen has an augmented power of combining with the carbon and hydrogen in the fuel, so that the velocity of the chemical reaction at the high temperature in a Diesel engine is greatly increased. As a result the range of fuels suitable for the Diesel engine comprises such heavy liquid fuels as petroleum residues, coal-tar oils, and coal tars.

A serious fuel loss in explosion engines is frequently caused by the decomposition of the fuel oil sprayed into the hot ball. Various hydrocarbons are formed with a separation of carbon and oil soot; part of this coats the hot ball and the cylinder, and a larger part is expelled with the gaseous products of combustion. From time to time accumulated soot in the exhaust piping catches fire and burns, necessitating precautions against fire from this source.

In the first Diesel engine planned, coal dust was to be the fuel. The adiabatic terminal pressure was to reach 250 atmospheres, and was to drop to 90 atmospheres with the termination of the isothermal combustion of the fuel. The cylinder was not to be water-cooled, but to be insulated against all radiation of heat. The thermal efficiency was to be 73 per cent. On account of the high pressure and temperatures involved and the small amount of useful work obtained, the original cycle was changed to that which has been in use for the last twenty years. It still remains the nearest approach to the Carnot cycle. The Diesel engine with its 45 per cent. indicated thermal efficiency is the most efficient heat engine of today. The efficiency of the Diesel cycle is about 60 per cent., of which 75 per cent. is realized in indicated work (45 per cent. net indicated thermal efficiency) and 60 per cent. in effective mechanical work (36 per cent. net effective thermal efficiency) in high-grade, four-stroke engines at full load. Two-stroke engines have a slightly lower efficiency.

#### VERTICAL DIESEL ENGINES

Inasmuch as most engines are used for the generation of electric current with direct-connected generators, four-cylinder units are necessary to obtain the desired cyclic regularity for satisfactory generator performance in engines having a four-stroke cycle, especially when two or more units are to operate in parallel. Multi-cylinder units also permit a higher number of revolutions, by shortening the stroke without necessarily increasing the piston speed of these units. Such features combine to produce a compact, relatively light engine. The closed crankcase is the construction favored for medium and high-speed engines, with which forced-feed lubrication is used. There is no spilling and spattering of lubricating oil, and the engine and engine-room floor are easily kept clean. The forced-feed lubricating system, at first used only on high-speed units, has proven so satisfactory and so economical in the use of lubricants that it is used increasingly on medium- and low-speed engines. In Europe, manufacturers have adopted this closed crankcase construction for units up to 1,000 h.p.

In larger engines, which require the use of A frames, the panels are connected with steel sheets provided with large doors between the individual frames, so as to obtain the advantages of a closed crankcase and of forced-feed lubrication.

On the bedplate is also mounted the multistage air compressor, usually in a vertical position to preserve the symmetry of the engine.

#### CONSTRUCTION OF CYLINDERS AND CYLINDER FRAMES

The cylinder frame receives the cylinder liner which has at the head end a heavy flange fitted to the cylinder frame. A registered joint is either placed wholly in the top of the flange of the cylinder liner or is divided over the top of the cylinder frame and the liner. Some constructors prefer the latter method, to insure a water-

tight and a gas-tight joint. The cylinder head is provided with a corresponding ring that fits into the registered joint, soft-copper packing rings being inserted between the surfaces.

The top end of the cylinder frame must be so designed as to provide ample metal, as in it are secured the stud bolts that hold the cylinder head and are subject to heavy stress.

The cylinder liner is provided in the middle with a machined rib or ring to center the liner and also to give it lateral support against a similar ring cast integral with the cylinder frame. The bottom part of the liner has another ring provided either with a gland ring or a groove into which fits a circular rubber packing ring. Both methods are used to insure a water-tight joint between mantle and liner. The cylinder liner is fixed only at the head end, and is therefore free to expand in the other direction.

The use of separate castings for the mantle and for the cylinder liner is important, as the cylinder liner becomes much hotter than the mantle, so that the unequal stresses produced in the two are likely to fracture a cylinder if cast integral with the mantle. Separate liners can be designed and made of the most suitable material; in case of excessive wear or fracture, they can be cheaply and easily replaced. On account of the rapid alternations of exceedingly high and low temperatures, cylinder liners are preferably made of a special close-grained cast iron of high tensile strength—capable of withstanding a load of 40,000 pounds per square inch—and able to withstand severe shock tests.

For cylinder lubrication the cylinder frame and the liner are perforated in four places, and oil passages consisting of small copper pipes are inserted between the mantle and the liner, and bridge the water space. These oil passages are in the same plane in the middle part of the cylinder, being spaced 90 degrees apart, and 45 degrees removed from the axis of the main shaft. As the front and the back cylinder walls receive the principal pressure, the oil feeds in these cylinders are sometimes set closer together, so as to feed the oil more freely to the surfaces most taxed.

#### CONSTRUCTION OF CRANKSHAFT

The high pressures common to Diesel engines demand proportionately heavy crankshafts. These are forged from the solid, a ductile low-carbon steel being used. Some manufacturers use nickel-steel shafts. For large engines, or for an engine made of two half units, the shaft is composed of more than one piece, although the common practice for stationary engines is to use one-piece shafts, even if four cranks are used.

#### METHODS OF LUBRICATION

When the shaft and the connecting rods are not drilled for forced-feed lubrication, it is usual to provide each crank with a centrifugal oiling ring to deliver the oil to the crankpins. For this purpose the crankpins are drilled, the drilled passages receiving the oil from the rings and delivering it to the pin brasses. Oil-drip rings turned out of the solid material of the shaft confine the oil to the main bearings and lead it to the oil reservoirs in the crankpit. On the shaft is mounted the helical gear for engaging a like gear on the governor shaft and driving it, the gears dipping into the oil. A crankpin for driving the air compressor is part of the main shaft and is lubricated in the same manner as the other pins. The flywheel and the driving pulley are usually mounted on an enlarged part of the shaft, the extension of which is carried in an outboard bearing.

The main bearings for this type of shaft are either provided with an oiling ring or are constantly flooded with oil under pressure issuing from a piping in the cover of each bearing.

(To be continued)



# Submarine Chasers in Foreign Waters

Those Who Have Friends in the Naval Reserve  
Assigned on Chasers Overseas Can Now Locate Them

Boat Numbers	Builder	Builder's Address	Boat Numbers	Builder	Builder's Address
1-4	New Orleans Naval Station	New Orleans, La.	288-312	Puget Sound Ship Yard	Bremerton, Wash.
5-64	New York Navy Yard	Brooklyn, N. Y.	313-317	Robert Jacob	City Island, N. Y.
65-74	Mathis Yacht Building Co.	Camden, N. J.	318-322	Luders Marine Const. Co.	Stamford, Conn.
75-89	Hiltebrant Dry Dock Co.	Kingston, N. Y.	323-327	Kyle & Purdy	City Island, N. Y.
90-105	Elco Co.	Bayonne, N. J.	328-329	Great Lakes Boat Bldg. Corp.	Milwaukee, Wis.
106-113	Charleston Navy Yard	Charleston, N. C.	330	Burger Boat Co.	Manitowoc, Wis.
114-115	New York Navy Yard	Brooklyn, N. Y.	331-332	Smith & Williams Co.	Salisbury, Md.
116-136	Norfolk Navy Yard	Norfolk, Va.	333-336	Barrett Shipbuilding Co.	Mobile, Ala.
137-138	Hodgon Bros.	East Boothbay, Me.	337-338	L. E. Fry & Co.	Clayton, N. Y.
140-141	Hartman-Greiling Co.	Green Bay, Wis.	339-346	American Car & Foundry Co.	Wilmington, Del.
142-143	Rocky River Dry Dock Co.	Rocky River, O.	347-360	College Point Boat Corp.	College Point, N. Y.
144-146	Vinyard Shipbuilding & Marine Engine Co.	Milford, Del.	361-364	Elco Co.	Bayonne, N. J.
147-148	L. E. Fry & Co. (E. J. Wright)	Clayton, N. Y.	365-370	Gibbs Gas Engine Co.	Jacksonville, Fla.
149-150	Dubuque Boat & Boiler Wks.	Dubuque, Iowa.	371-375	Hiltebrant Dry Dock Co.	Kingston, N. Y.
151-155	Gibbs Gas Engine Co.	Jacksonville, Fla.	376-380	Kyle & Purdy	City Island, N. Y.
156-159	F. M. Blount	Pensacola, Fla.	381-385	Mathis Yacht Bldg. Co.	Camden, N. J.
160-168	Howard E. Wheeler	Brooklyn, N. Y.	386-392	Mathews Boat Co.	Port Clinton, O.
169-178	Matthews Boat Co.	Port Clinton, O.	393-402	New York Yacht, Launch & Engine Co.	Morris Heights, N. Y.
179-188	International Shipbuilding & Marine Engine Co.	Upper Nyack, N. Y.	403-406	Rocky River Dry Dock Co.	Rocky River, O.
189-203	General Shipbuilding & Aero Co.	Washington, D. C.	407-408	Camden Anchor-Rockland Machine Co.	Camden, Me.
204-208	Gibbs Gas Engine Co.	Jacksonville, Fla.	409	Chance Marine Const. Co.	Annapolis, Md.
209-213	Mathis Yacht Bldg. Co.	Camden, N. J.	411-412	Clayton Ship & Boat Bldg. Corp.	Clayton, N. Y.
214-217	Alexander McDonald	Mariners' Harbor, L. I., N. Y.	413-418	College Point Boat Bldg. Corp.	College Point, N. Y.
218-222	Newcomb Life Boat Co.	Hampton, Va.	419-420	Great Lakes Boat Bldg. Corp.	Milwaukee, Wis.
223-242	New York Yacht, Launch & Engine Co.	Morris Heights, N. Y.	421-425	Hiltebrant Dry Dock Co.	Kingston, N. Y.
243-247	Eastern Shipyard Co.	Greenport, N. Y.	426-430	Mathis Yacht Bldg. Co.	Camden, N. J.
248-250	Chance Marine Const. Co.	Annapolis, Md.	431-433	Mathews Boat Co.	Port Clinton, O.
251-252	Camden Anchor-Rockland Machine Co.	Camden, Me.	434-436	Alexander McDonald	Mariners' Harbor, N. Y.
253-272	Geo. Lawley & Son Corp.	Neponset, Mass.	437-438	Rocky River Dry Dock Co.	Rocky River, O.
273-287	Mare Island Navy Yard	Philadelphia, Pa.	439-441	Howard E. Wheeler	Brooklyn, N. Y.
			442-444	New Orleans Naval Station	New Orleans, La.

## American Builders of the 110-Foot Chasers

A Complete List of the Names and Addresses of Those  
Firms Which Contributed to Winning the War

No.	Location	Builders	No.	Location	Builders
1	Plymouth	New Orleans Naval Station	190	Gibraltar	Genl. Shipbuilding & Aero Co.
34	Plymouth	New York Navy Yard	191	Gibraltar	Shipbuilding & Aero Co.
35	Plymouth	New York Navy Yard	206	Plymouth	Gibbs Gas Engine Co.
36	Plymouth	New York Navy Yard	207	Plymouth	Gibbs Gas Engine Co.
37	Plymouth	New York Navy Yard	208	Plymouth	Gibbs Gas Engine Co.
38	Plymouth	New York Navy Yard	210	Gibraltar	Mathis Yacht Building Co.
39	Plymouth	New York Navy Yard	211	Azores	Mathis Yacht Building Co.
40	Plymouth	New York Navy Yard	212	Gibraltar	Mathis Yacht Building Co.
41	Plymouth	New York Navy Yard	213	Azores	Mathis Yacht Building Co.
44	Plymouth	New York Navy Yard	214	Gibraltar	Alexander McDonald
45	Plymouth	New York Navy Yard	215	Corfu	Alexander McDonald
46	Plymouth	New York Navy Yard	216	Corfu	Alexander McDonald
47	Plymouth	New York Navy Yard	217	Corfu	Alexander McDonald
48	Plymouth	New York Navy Yard	220	Plymouth	Newcomb Life Boat Co.
62	Azores	New York Navy Yard	221	Plymouth	Newcomb Life Boat Co.
63	Azores	New York Navy Yard	222	Plymouth	Newcomb Life Boat Co.
64	Azores	New York Navy Yard	223	Gibraltar	N. Y. Yacht, Launch & Engine Co.
72	Gibraltar	Mathis Yacht Building Co.	224	Brest	N. Y. Yacht, Launch & Engine Co.
77	Corfu	Hiltebrant Dry Dock Co.	225	Corfu	N. Y. Yacht, Launch & Engine Co.
78	Corfu	Hiltebrant Dry Dock Co.	226	Bordeaux	N. Y. Yacht, Launch & Engine Co.
79	Corfu	Hiltebrant Dry Dock Co.	227	Corfu	N. Y. Yacht, Launch & Engine Co.
80	Corfu	Hiltebrant Dry Dock Co.	244	Corfu	Eastern Ship Yard Co.
81	Corfu	Hiltebrant Dry Dock Co.	248	Corfu	Chance Marine Construction Co.
82	Corfu	Hiltebrant Dry Dock Co.	255	Corfu	Lawley
83	Plymouth	Hiltebrant Dry Dock Co.	256	Corfu	Lawley
84	Plymouth	Hiltebrant Dry Dock Co.	257	Plymouth	Lawley
85	Plymouth	Hiltebrant Dry Dock Co.	258	Azores	Camden Anchor Rockland Machine Co.
86	Plymouth	Hiltebrant Dry Dock Co.	259	Plymouth	Camden Anchor Rockland Machine Co.
87	Plymouth	Hiltebrant Dry Dock Co.	253	Gibraltar	Lawley
90	Corfu	Elco Co.	254	Plymouth	Lawley
91	Plymouth	Elco Co.	258	Plymouth	Lawley
93	Corfu	Elco Co.	259	Plymouth	Lawley
94	Corfu	Elco Co.	260	Le Palteau	Lawley
95	Corfu	Elco Co.	262	Plymouth	Lawley
96	Corfu	Elco Co.	264	Azores	Lawley
97	Plymouth	Elco Co.	270	Gibraltar	Lawley
98	Harwich	Elco Co.	271	Plymouth	Lawley
99	Le Palteau	Elco Co.	272	Plymouth	Lawley
100	St. Nazaire	Elco Co.	277	Azores	Mare Island Navy Yard
101	Brest	Elco Co.	278	Azores	Mare Island Navy Yard
103	Brest	Elco Co.	301	Azores	Puget Sound Ship Yard
110	Plymouth	Charleston Navy Yard	321	Harwich	Luders Marine Construction Co.
111	Plymouth	Charleston Navy Yard	322	Brest	Luders Marine Construction Co.
124	Corfu	Norfolk Navy Yard	323	Plymouth	Kyle & Purdy
125	Corfu	Norfolk Navy Yard	324	Corfu	Kyle & Purdy
126	Gibraltar	Norfolk Navy Yard	325	Plymouth	Kyle & Purdy
127	Corfu	Norfolk Navy Yard	327	Corfu	Kyle & Purdy
128	Corfu	Norfolk Navy Yard	329	Plymouth	Great Lakes Boat Building Co.
129	Corfu	Norfolk Navy Yard	330	Gibraltar	Burger Boat Co.
130	Corfu	Norfolk Navy Yard	331	Gibraltar	Smith & Williams
131	Corfu	Norfolk Navy Yard	332	Gibraltar	Smith & Williams
135	Azores	Norfolk Navy Yard	337	Corfu	L. E. Fry
136	Gibraltar	Norfolk Navy Yard	338	Corfu	L. E. Fry
137	Plymouth	Hodgon Brothers	340	Azores	American Car & Foundry Co.
143	Brest	Rocky River Dry Dock Co.	341	Azores	American Car & Foundry Co.
147	Corfu	L. E. Fry	342	Plymouth	American Car & Foundry Co.
148	Brest	L. E. Fry	343	Plymouth	American Car & Foundry Co.
151	Corfu	Gibbs Gas Engine Co.	344	Plymouth	American Car & Foundry Co.
164	Plymouth	H. E. Wheeler	345	Plymouth	American Car & Foundry Co.
165	Azores	H. E. Wheeler	346	Plymouth	American Car & Foundry Co.
177	Brest	Mathews Boat Co.	349	Corfu	American Car & Foundry Co.
178	Plymouth	Internatl. Shipbuilding & Marine Engine Co.	352	Plymouth	College Point Boat Corp.
179	Corfu	Internatl. Shipbuilding & Marine Engine Co.	353	Plymouth	College Point Boat Corp.
180	Gibraltar	Internatl. Shipbuilding & Marine Engine Co.	354	Plymouth	College Point Boat Corp.
181	Plymouth	Internatl. Shipbuilding & Marine Engine Co.	356	Plymouth	College Point Boat Corp.
182	Plymouth	Internatl. Shipbuilding & Marine Engine Co.			

# Personalities

Some of the Men Who Have Helped to Give the Motor Boating Industry Its Present Standing

## Oscar A. Youngren

Oscar A. Youngren, the inventor of the Ever-Warm Safety-Suit, is reaping the fruits of a young lifetime devoted to "Safety First" principles. The life saving suit which is now widely known, with which the United States transports' hospital bays are equipped and which is familiar to all ocean-going passengers, is the result of his prevision of the solution of the "safety at sea" problem.

He was interested and identified with "Safety First" activities while pursuing his work in engineering and railroad operation, with his home in Sheridan, Wyoming, when the *Titanic* disaster gave him the final inspiration for a life saving device which would not only keep one afloat until rescued, but would protect the shipwrecked from exposure. He was crossing the Atlantic at the time and, on reaching home, proceeded to work out the details of his invention.

The weeks and months of patient, confident testing and experimenting to perfect the Ever-Warm Safety-Suit



O. A. Youngren

can be imagined. Then he came East, passed Government trials, secured patents for the United States and the principal foreign countries and opened an office in New York City. Mr. Youngren is now and has been for two or three years a resident of Manhattan and is still in the early thirties.

Recently, the International Life Suit Corporation, which was the selling company, was amalgamated with the parent company, the National Life Preserver Co., of 11 Broadway, New York City, and now all the activities—manufacturing and distributing—are under the centralized direction of this parent company. Mr. Youngren is vice-president and general manager of the National company, of which W. N. Hanson, of Sheridan, is president, and James A. Watt, of New York and Kew Gardens, L. I., is secretary.

## William H. Phillips

William H. Phillips, the new president of Devoe & Raynolds Co., Inc., started his paint career thirty-five years ago.

Mr. Phillips was born in New York City, and received his education in the public schools and the College of the City of New York.



W. H. Phillips

His knowledge of paint making and paint merchandizing is based on experience and practical tests, as he spent the first eight years of his business life in the Devoe paint factory and learned all that could be learned by close application.

Mr. Phillips then traveled for the house and customers in many towns still remember the young man who left the road to take up executive duties—later becoming sales manager for F. W. Devoe & C. T. Raynolds Company.

In 1914 Mr. Phillips was elected a director of the company and assumed the duties of general manager.

Since the country became involved in war, Mr. Phillips has given a great portion of his time to the Government in representing the paint and varnish interests on the War Service Committee connected with the Council of National Defense in Washington, and is chairman of the War Conference Committee of the Paint and Varnish Industry, which committee was appointed at the suggestion of the War Industries Board, and is also chairman of Region No. 3, of the Regional Advisors or



J. J. Alsasser

Representatives appointed at the suggestion of the War Industries Board.

Mr. Phillips has proven his ability as an executive who puts technical knowledge to best advantage and his steady

rise to prominence in the paint and varnish industry proves his true worth as a leader and organizer.

## Edward H. Raynolds

Edward H. Raynolds, chairman of the Board of Directors of Devoe & Raynolds Co., Inc., has seen forty years of service in the paint and varnish business.

In the midst of his preparations for college his father, Charles T. Raynolds, who with Frederick W. Devoe and Charles T. Pratt were partners in the paint business in the early fifties, decided (as was quite the custom in those days) that a business training would be more beneficial to a young man than a college education and put him to work at the mailing desk of C. T. Raynolds & Company.

By careful application and effort Mr. Raynolds rapidly increased his value to the concern and worked his way to the top through the various departments of C. T. Raynolds & Company, which in 1892 again joined forces with F. W. Devoe & Company.



E. H. Raynolds

Mr. Raynolds' supervision of the purchasing department of F. W. Devoe & C. T. Raynolds Company's business and his knowledge of finance have built an enviable reputation for him in the trade as a shrewd, far-sighted executive.

## John J. Alsasser

The treasurer of Devoe & Raynolds Co., Inc., John J. Alsasser, was born in La Porte, Ind., and came to the old firm of F. W. Devoe & Company as assistant bookkeeper in the year 1893. He later was made credit manager and placed in charge of the office and was also treasurer of the Devoe & Raynolds Co., of Illinois. On the death of George A. Meyer, treasurer of the Devoe & Raynolds Co., Inc., he became treasurer of that company.

Mr. Alsasser while spending his business days in Chicago has a home at Rockford, Ill.

As a business man he is a typical broad-minded Chicagoan, visionary in the proper way, and the finances of the company will be safe in his hands.

# The Month in Motor Boating

## Make Sure of Your Engine Manufacturer

**O**N our office lists we have the names and addresses of more than 800 so-called manufacturers of marine engines, who claim to have made one or more marine engines some time. We are also constantly receiving inquiries by mail and telephone asking for the address of this or that engine building company of which we have no record. Therefore we feel safe in believing that there must be at least a thousand odd persons or concerns which at one time or another have been engaged in the building of marine gasoline engines.

MoToR Boating endeavors to keep tabs on the business standing of those in the industry for the benefit of its readers. It is constantly writing to the trade to keep up with what they are doing and learn of new developments so that it may bring all worth while to the attention of its readers. Of the thousand or more so-called engine manufacturers, it is safe to say that not over 200 of them are entitled to be classed as such. It is very doubtful whether more than this number of manufacturers build more than one engine a year. The other 800 are unreliable, not a safe party with which to do business and pay little or no attention to correspondence.

Of the 200 remaining names, it is also doubtful whether 100 of them are deserving of recognition by the great body of motor boatmen today or that great body of boatmen to be. Most of them may have made a motor once, or build one or two occasionally as a side line, or will take an order to build a motor should one come their way. Such concerns seem to come to life when there are signs of a good boating year, but pass out of existence when they are called upon to make good.

By this process of elimination, it leaves the industry with a possible 100 builders of marine motors who can be called such. But even among these 100, there is a whole lot of dead wood which one cannot afford to class as legitimately belonging to a healthy industry. Many of them are in no sense manufacturers—just builders. They are carried along on the backs, so to speak, of the few live engine building concerns which we have, those who are entitled to the public's confidence and should receive the benefit of the public's orders.

In other words, the standing and reputation of the concerns which are building engines to-day and are to build the enormous number of motors which are bound to be built during the next few years is a most important consideration from the buyer's standpoint. An order placed with an unreliable engine building concern is an order wasted and a distinct money loss to the intended purchaser. The purchaser's reason for placing such an order may appear superficially good but there can be but one answer and one result. The performance of any marine engine bears a distinct and direct relation to the reputation and reliability of its maker. Trouble is in an indirect ratio.

Take our advice, Mr. Buyer, look well into the subject. Don't let money or low prices be the whole story. Beware of promises that cannot be made good. A reliable manufacturer has the proof, the other has not. A motor purchased from the former is not troublesome.

## Price Reductions Not Likely

**A**T this moment, when the sport of motor boating is on the threshold of the greatest season of activity it has ever seen, there are not a few persons who are showing a hesitancy to place their orders for new boats and engines owing to a condition which they believe is sure to come in the very near future—that of great reduction in prices. They point to the recent reductions in the prices of some automobiles as examples of what is sure to follow in the marine field. However, if these doubtful persons would take time to analyze

market conditions, they would soon see how far from the truth their ideas are.

Let us first compare the marine field with the motor car situation. The Government ruled several months ago that passenger car production was non-essential and that it must be curtailed. Thereupon a large number of the manufacturers of motor cars advanced their prices very substantially so that in some cases their prices were 80 per cent. to 100 per cent. higher than two years ago. This advance was justified not only from a patriotic standpoint but also on account of the laws of supply and demand.

With the coming of peace the non-essential ruling was withdrawn and a dozen or more of the manufacturers reduced their prices \$300. to \$500. per car. But in no case did they come down to the pre-war level. In most instances existing prices on cars are more than 50 per cent. higher than they were two years ago.

In the marine field conditions are entirely different. There was no non-essential ruling and consequently no jump of from 80 to 100 per cent. on the price of boats and engines. Some manufacturers have advanced their prices within the last two years, but the increases have been small. We doubt very much if any of them are selling today at a figure more than 20 per cent. higher than formerly. Some manufacturers have made no increases in prices in spite of the great increase in the cost of raw materials and labor.

It is unnecessary for us to emphasize the point that cost of any commodity is based almost entirely upon the cost of these two items of material and labor. It is reasonably certain that there is to be no immediate reduction in the price of either. On the other hand, advances along some lines appear more likely than reductions.

The prices of boats and marine engines are now at a level lower than years ago in comparison with similar manufacturing markets. There can be no immediate reduction in prices commensurable with quality if the industry is to live. The intended purchaser should hesitate no longer. Now is the time to act. The opening of the boating season is not too far off. The demand for boats and engines will be so great as this time approaches that none except those with a good amount of forethought can hope to be accommodated.

## Our February Number

**T**HE next issue of MoToR Boating, besides being our Victory Number which will be dedicated to the yachtsmen of the country who went into any branch of the Naval Service, will contain several other new and interesting features. As previously announced, the new "My Ideal Auxiliary" series will begin in the February issue of MoToR Boating. A series on Astronomical Navigation will also begin in the next issue. This series will be far different from the average dry magazine "articles" on navigation which are generally written in a most uninteresting manner and are far from understandable by the average man. This series we will call "Graphic Navigation" as the writer will show by means of numerous simple diagrams how easy it is to master the subject without the use of higher mathematics. As author for this series, we have been especially fortunate in obtaining the services of Captain A. C. Knight, the principal of the United States Power Squadron Free Nautical Schools during the war period.

Every motor boatman will want to read and study each installment of Captain Knight's series and preserve it for future reference. As it will be impossible for us to guarantee copies of back issues, readers should make sure of their numbers by being subscribers.



# AMERICAN MARINE MOTORS

## The Clay Heavy-Duty Marine Motor

**B**EGINNING with the manufacture of one marine engine by E. H. Clay for his own use over twenty-one years ago the manufacture of Clay motors has steadily progressed until today the Clay Engine Manufacturing Company has taken over the large plant formerly occupied by the Hal Motor Co., Cleveland, O.

The original Clay motor and its prototypes that were

and today is one of the most modern and up-to-date heavy-duty motors on the market.

These engines are built in one-, two-, and four-cylinder types, developing from 4 to 100 h.p. according to the size and are especially adapted for fishing boats, commercial boats or wherever a thoroughly dependable and economic power plant is desired. The extreme simplicity of the motor is greatly appreciated in the commercial boat field where it is often necessary to depend on unskilled help to operate the engine.

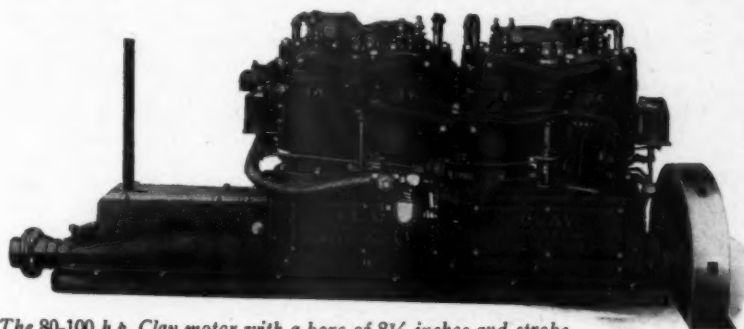
Every part is made extra heavy as an added factor of safety and all parts are easily accessible. One notable feature of the design is the location of the valve cams, and entire valve mechanism on top of the cylinder head where it is in plain view of the operator at all times. Another feature is that all nuts, bolts, studs, and fittings are standard and can be purchased at any hardware store.

The cylinders, cylinder heads, pistons and crankcase are of high grade gray cast iron, and of simple pattern to assure perfect castings.

The crankcase has a separate compartment for each crankthrow and is ribbed and webbed to assure a rigid support for cylinders and crankshaft.

The crankshaft and connecting rods are machined from carbon steel forgings. The valves have cast iron heads threaded and welded to cold rolled steel stems

(Continued on page 72)



The 80-100 h.p. Clay motor with a bore of  $8\frac{3}{4}$  inches and stroke of 10 inches is truly a heavy duty motor

built to order by Mr. Clay at the request of his neighbors would hardly be recognized as being the original from which the present motor was developed. There is one point in common, however, the original engine was a four-cycle valve-in-head machine and this type of construction has been maintained to the present day. The engine has been improved on at every opportunity

## The Gulowsen Grei Oil Engine

**A**FTER sixteen years of successful production of crude oil engines at Christiania, Norway, the Gulowsen Grei Engine Company have recently completed and put into operation one of the most modern oil engine factories in the United States. The plant occupies six acres of ground with 1,000 feet of waterfront on Salmon Bay, Seattle, Wash. Sales in the western half of the United States are handled directly from the factory while the M. H. Tracy Co., Inc., of 17 State St., New York City, will take care of the eastern sales with Wm. J. McAuslin as sales manager.

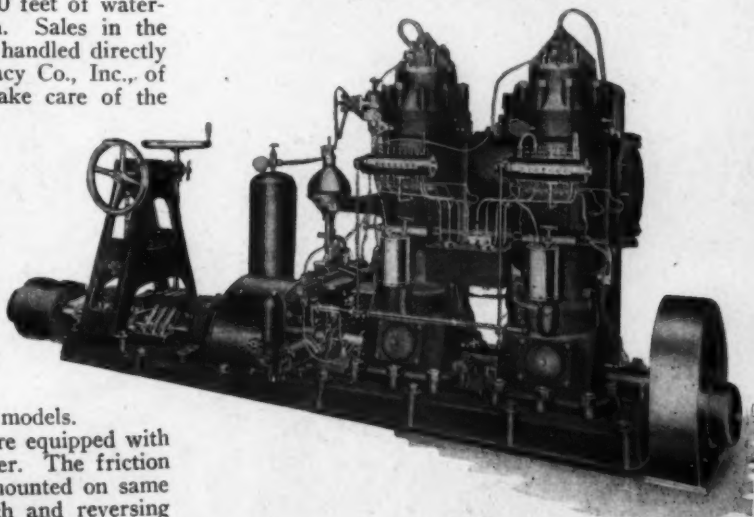
These engines are of the two-cycle type and operate on the hot bulb principle. The fuel consumption is about one-half pound or .066 gallons per horsepower hour and by means of an effective lubrication system the amount of lubricating oil used is reduced to a minimum. With this system of lubrication no oil can reach the bilge of the vessel, thus complying with the insurance regulations. These engines are built in one-, two-, and four-cylinder models.

The one- and two-cylinder motors are equipped with a friction clutch and reversible propeller. The friction clutch and reversing mechanism are mounted on same bedplate as cylinders preventing clutch and reversing gears getting out of line. The four-cylinder motors are directly reversible, starting and reversing by compressed air. On sailing vessels where engine is used as an auxil-

iary they are equipped with a one-way starting clutch.

Special attention was given to the design of the bedplate and crankcase so as to insure rigidity under all loads. The hand-hole plates in the crankcase are espe-

(Continued on page 72)



A two-cylinder Gulowsen Grei engine equipped with friction clutch and reversible propeller mechanism

# Possibilities of the Motor Fishing Boat

By George S. Hudson

**P**OSSIBILITIES of the small fishing boats used by Italians out of Boston seem limitless. In the winter time these 30-footers with gasoline motors hardly ever rated at more than 15 h.p. venture up and down the coast in weather that sees other vessels scurrying for shelter. They come and go and I have yet to hear of a man being drowned through fault of a boat.

These Italian dories are not a product of a naval architect's genius. I doubt if any one boat out of the 400 hailing from Boston ever was laid out on paper by a designer whose reputation is known to yachtdom. Without exception the "ginny" dories, as the boats are locally known, are rule of thumb in the strictest sense. Yet their performance leaves nothing to be desired by the man who employs himself afloat either for a livelihood or for pleasure.

When motor yachts of similar dimensions are in snug quarters under canvas the Italians are much in evidence in New England waters. How these fellows manage to get about in safety has remained a mystery to mariners who chance to meet them far from land. There's something almost uncanny about them. Is it skill? Perhaps; but the element of luck plays an important part, after all. The boats are of shallow draft, seldom more than two feet even in the large sizes and the helmsman knows he can go any place where the sea does not break without much risk of touching bottom unless the water drops out from under him which occasionally happens in a trough.

I recall the excited manner in which the captain of a four-masted schooner reported falling in with an Italian fisherman forty miles east of Cape Cod during

the extreme low temperature that obtained last winter. The schooner was bound round the cape with a cargo of coal and had been blown offshore by a westerly gale. While coming toward land the Italian boat was sighted and the schooner hove to as it was apparent that no small boat had any business out there and must be in dire need of assistance. In a short time the boat reached the coaster and drew alongside.

Besides the man at the wheel there were two others in the motor compartment. Smoke was drifting from the pipe protruding from the deck, telling they had a stove for comfort. The boat's deck was inches deep under ice and, within reach of the man at the wheel was an axe with which he had been chopping the accumulation as far as he could reach in an effort to lighten the load she was carrying. Nobody looked excited as the men shoved heads out of the companion for a glimpse of the schooner which was badly iced, herself.

"Want any help?" megaphoned the skipper.

"Bound for Boston?" came from the boat's high priest.

"Yes", from the coaster.

"I'll follow," shouted the big man of the boat.

The coaster filled away in the moderate air and the Italian shaped a course in her wake. That night the schooner hung a light over the taffrail as a guide for the pigmy and, in due time, they parted company off Minot's Light, in Boston Bay. Although the captain of the schooner never quite understood how the boat happened to be so far from frequented fishing grounds in dead of

(Continued on page 70)



A "ginny" motor dory with the crew baiting trawls

# Commercial After-War Plans Already Started

Great Impetus Given to the Building and Powering of Motor Work Boats by the Return to Peace Conditions

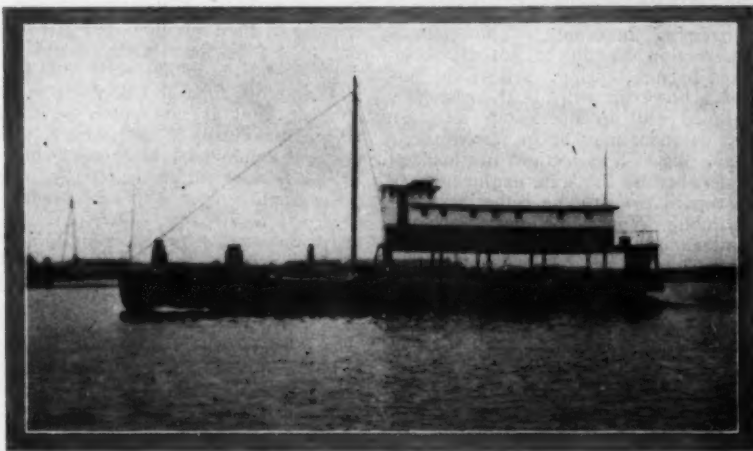
THE gas and oil engine companies are looking forward to a rapid growth of motor boats for business purposes on California rivers now that the end of the war has released capital and material for internal development.

Referring to the future along this line, James S. Hawkins, president of the Acme Engine Co., of San Francisco, said:

"Transportation is to trade what the circulation of blood is to a living being. Its cessation spells death; its interruption sickness and a long train of evils. This was never better illustrated than in the railroad freight tie-up last winter and the lesson has been hammered home in the losses sustained since then through the inadequate development of our railroad systems.

"In the past we have been content to turn over to the railroads nearly all of our transportation. Our rivers and lakes, especially the former, have been neglected while we laid more rails. Giant thought it was, in the crisis railroad transportation 'fell down'. It showed itself to be unable to handle the traffic and a more or less congested condition has obtained ever since.

"Now, that the control of the railroads has been concentrated in the hands of the Government, far-seeing statesmen are looking to the rivers as a means of lifting the burden from the overtaxed giant. And, in looking to the rivers there is little thought of any other motive power than the internal combustion engine."



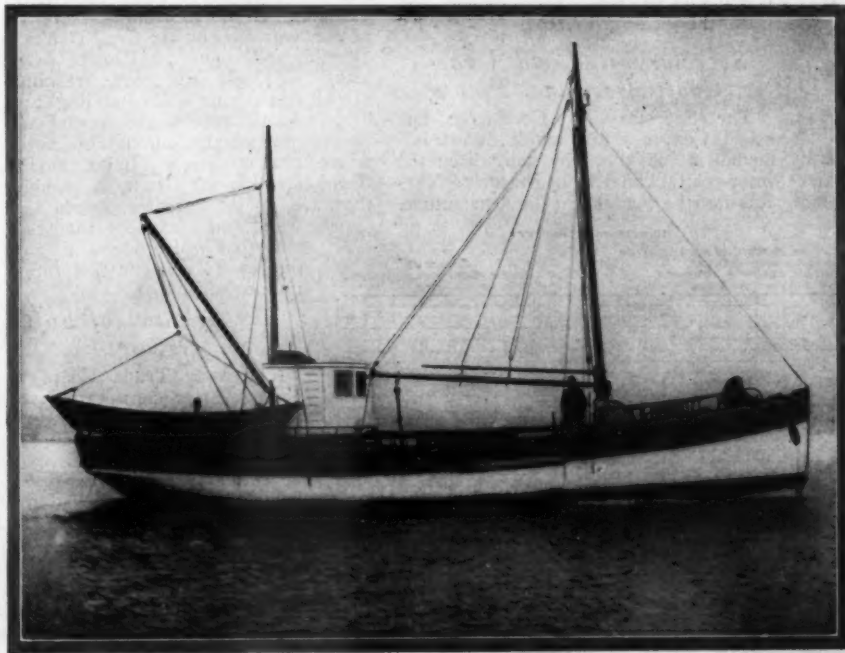
Freighter W. A. Fletcher is one of the motor boats built by W. A. Cryer, of Oakland, for the Fletcher-Wheeler Transportation Co., of Stockton, Cal. She is 92 feet long, 28 feet of beam and 6 feet of depth. The boat is powered with twin screw Acme engines each 45 h.p. and of three cylinders

At the time Mr. Hawkins made this prediction, W. F. Dickie and Major F. A. Poland, U. S. A., members of the inland waterway section of the United States Railroad Administration were examining the waters of the Sacramento and San Joaquin Rivers in California with the view of formulating plans for the development of these waterways.

With little or no attention from the Federal Government these rivers have already developed a considerable tonnage. The last Government statistics show an annual tonnage on the Sacramento of 875,000 tons, valued at \$46,908,000 and on the San Joaquin of 824,000 valued at \$42,179,000. On the Sacramento most of this tonnage is handled by stern-wheel steamers and barges, but on the San Joaquin the motor boat is playing a more important part, especially in what is called the delta region. Three motor boat companies are operating about Stockton and while they have not developed their fleet of motor boats as far as promised a year ago, on account of war conditions, they are all active and expecting to build more boats as soon as practicable.

The San Joaquin is navigable but a short distance up its main channel at present, but it is said that it could be developed to Fresno about 100 miles at a very small expense. One proposition for its development includes a dam and lock, which may be built for little more than a

(Continued on page 52)



Motor fishing boat Norland, a 53-footer, powered with a 45 h.p. motor, which makes an average speed of 8½ knots



# Yard and Shop

## Utility of the New York State Barge Canal

Recent reports show that work on the New York State Barge Canal is progressing favorably. The channel construction should be entirely completed by next spring. All of the terminals, however, will not then be fully equipped and in operation, although most of them may be in fairly usable shape. As soon as sections in the canal are finished by the state engineer, they are turned over to the Superintendent of Public Works for operation and maintenance. It will be necessary for the department to remove such slides as may have occurred and also to dredge such silt as may have been deposited before the canal will be ready for operation.

Traffic along the Erie Canal is at present increasing rapidly, and State officials say that everything points to a big wind-up during the remainder of the season. Many of the new boats are arriving in Buffalo loaded with flaxseed, oilmeal, and other material from New York. When it is impossible to obtain loads here for the boats they proceed to Buffalo, light, and loading with grain, return immediately to the seaboard.

## Speedway News

Following the practice of the large ship building companies the Gas Engine & Power Co., & Chas. L. Seabury & Co., Cons., have invaded the publishers' field with a monthly called the *Speedway News*.

Editor Clement G. Amory may well be proud of his efforts in this new line of endeavor as the *Speedway News* is in every way up to the high standard of other *Speedway* products. The employees, their work, recreation and welfare, and instructive articles on shipbuilding are the subjects treated.

## New Durkee Catalog

Chas. D. Durkee & Co., of 2 South St., New York City, have recently issued their 1918 catalog of hardware for wet places. It is compiled after the same style as their previous one with all their products fully illustrated and described.

The 1918 catalog contains a number of new devices and equipment that have been on the market since the previous issue, including automatic sprinklers and several automobile accessories. The Durkee catalog is probably the most complete catalog of marine hardware and supplies that is compiled by any company and should prove a valuable addition to the files of any one interested in this line of merchandise.

## Rope on Shipboard

The Plymouth Cordage Co., of North Plymouth, Mass., have recently issued a booklet entitled "Plymouth Rope and the

## Notes of Interest to Both Owner and Manufacturer

Merchant Marine" that is not only a catalog of their products but a treatise on rope, its manufacture, and use aboard ships. It describes the various kinds of rope and cordage, where and why they are used both on sailing vessels and steamers and illustrates the methods employed in rigging a ship.

The booklet is illustrated by many photographs of the various kinds of rope, the hemp from which it is made and the uses to which it is put. Every cordage product from yacht marlin to the heaviest wrecking cable is fully described and illustrated.

## Exports to Russia

The War Trade Board announce that applications will now be considered for the exportation of all commodities to Russia.

Exporters are requested to file their applications with the Bureau of Exports, War Trade Board, Washington, D. C.

A limited amount of cargo space may be available for shipments from the Pacific Coast direct to Vladivostok, and, in allocating space, preference will be given to material covered by licenses issued on and after October 7, 1918, under conditions which the War Trade Board in Washington is prepared to define and discuss with exporters, giving due consideration to the particular transactions in question.

In order to facilitate the consideration of applications, exporters are requested to state definitely on each application whether or not the material is made up and ready for shipment, and if so, the location thereof.

## Secretary Redfield Urges Coastwise Canal Plan

The Secretary of Commerce has asked Congress to provide funds immediately so that the long-discussed inter-coastal canal from Boston to Norfolk may be realized in the near future.

Mr. Redfield recommended the purchase and improvement of the Cape Cod Canal and the Chesapeake and Delaware Canal, which together with the Delaware and Raritan Canal and Long Island Sound will provide an inside route from New England to the South Atlantic States.

The completion of this inside route together with the New York State Barge Canal will provide water transportation from the Great Lakes territory to a greater part of the Atlantic Coast and furnish much needed relief to the congestion of the railways.

## Mississippi Fleet En Route

Flying the flag of the United States Railroad Administration, and carrying the equivalent of 150 carloads of freight, the first fleet of the Government's Mississippi-Warrior Waterways project is now en route from St. Louis to New Orleans. River transportation was inaugurated with impressive ceremonies. The fleet comprised the towboat Kokomis, with a tow of three barges. Five steel towboats and twenty-nine barges have been assembled, and regular Saturday sailings between St. Louis and the Gulf will be maintained hereafter.

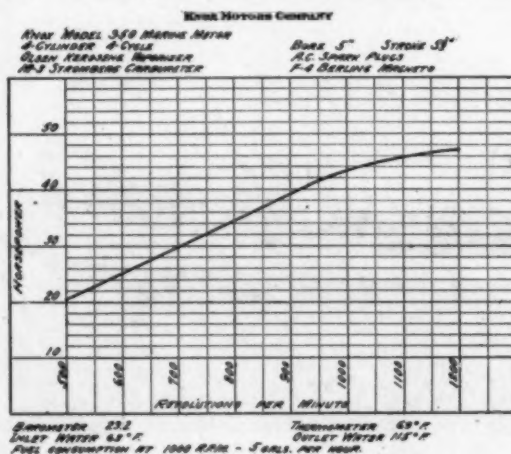
## Conserving the Gasoline Supply

Uncle Sam is making up his huge mailing list for the circulation of posters and gasoline conservation literature, but the large oil corporations have also arranged to get quick distribution for the posters by distributing them through the instrumentality of their wagon drivers to every garage and filling station to which they deliver gasoline. In the beginning there will be concentration on the five "Don'ts"—"Don't spill any"; "Don't permit leaks"; "Don't use for washing"; "Don't run engine while standing"; and "Don't leave tanks or cans open," with the supplementary admonition not to waste lubricating oils. Later the Fuel Administration may issue a pamphlet that will go into greater details as to ways and means of that economy that will render the "gasoline card" and the "oil ration" unnecessary.

## Exportation of Soft Greases

The War Trade Board announce, after consultation with the United States Food Administration, that applications for licenses to export animal and vegetable fats and greases testing 40° titer and below will be considered, subject to the rules and regulations of the War Trade Board.

Applicants should, therefore, state in their applications the degree of hardness of the fat or grease they desire to export. Applications not giving this information will be considered as covering fats and greases



testing above 40° titer, and will consequently be refused.

In order that the Collectors of Customs may have evidence that the fats and greases shipped against licenses which may be issued are as described in the licenses, such licenses will bear the following clause:

"This license is not valid unless presented to the Collector of Customs with a certificate from the Inspector of the Bureau of Animal Industry of the U. S. Department of Agriculture, showing that the degree of hardness conforms to the description given on this license."

Arrangements have been consummated with the Bureau of Animal Industry of the Department of Agriculture whereby inspectors are authorized to issue certificates upon proper examination of fats and greases to be exported. Every shipment made in accordance with the above procedure is subject to re-examination at port of exit by the Bureau of Animal Industry for the Department of Agriculture.

### Kerosene Test on Knox Marine Motor

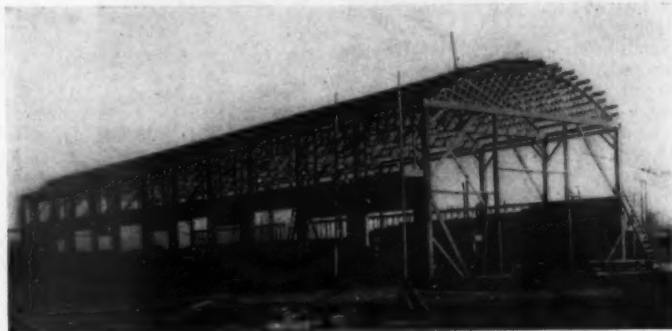
On December 3, a test was made on the Knox marine motor, Model 350, using a stock Olsen vaporizer as built by the United States Vaporizer Co., of 213 State St., Boston, Mass. This test was made on their regular testing stand, using the Sprague electric dynamometer and was made in the presence of Mr. Elms of the United States Vaporizer Company.

The vaporizer was bolted directly to the inlet manifold and the exhaust manifold of the motor connected to the vaporizer by pipe fittings allowing the exhaust gases to pass directly through the vaporizer and then upward through an extended tail pipe with an easy bend directly into the atmosphere. A standard Stromberg carburetor of the 1½ inch M3 type was used, this being the same carburetor which we have previously used in their tests using gasoline as fuel. The fuel used was a standard grade of kerosene purchased in the open market. The kerosene tank was piped directly to the bottom of the vaporizer fuel compartment and a lead was taken from the top of the same compartment and connected to a two-way cock at the carburetor. A hot air pipe was connected from the hot air compartment of the vaporizer to the air intake of the carburetor and in this pipe between the vaporizer and the carburetor was installed the regular air adjusting sleeve as supplied with the carburetor. A trial run previously made with this sleeve, but no auxiliary air inlet, showed that the mixture was altogether too rich and that an auxiliary air inlet was necessary.

The motor was started and run on gasoline for about ten minutes and then switched over by means of the two-way

valve, previously mentioned, to the kerosene. Several power curves were pulled to get the proper carburetor adjustment and then two runs were made of from 500 to 1,200 r.p.m. inclusive, readings being taken at each 100 revolutions. The average of these shows the power curve as given in the diagram on page 36.

At the close of this power curve the motor was stopped, the kerosene tank filled and the motor again started and allowed to run about five minutes and then run for one-half hour at 1,000



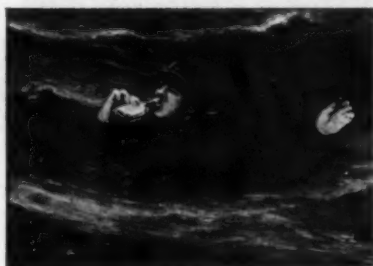
New punch shop recently completed at the plant of the Defoe Boat & Motor Wks., at Bay City, Mich.

r.p.m., showing 41.5 h.p. At the end of one-half hour's run the reading from the fuel tank was taken and it was noted that exactly 2½ gallons of kerosene had been consumed. This shows a consumption of 5 gallons per hour at the above speed and power or a trifle less than one pint per horsepower hour.

### A Dictionary of Ship Building Terms

"Modern Ship Building Terms," by F. Forest Pease, published by J. B. Lippincott Co., of Philadelphia, Pa., is a book that should prove of great value to shipyard workers on steel ships. It explains thoroughly all the names of parts and processes. There are also chapters on electric welding, oxy-acetylene welding, and the Isherwood system of steel ship construction.

There are in all 2,000 definitions of which 350 are illustrated and 82 plates showing the methods and practices of steel ship construction, from lining up the keel blocks to the completed ship. The various parts of the power plant are very completely illustrated and described. The price of the book is \$2 net.



The Dreadnaught safety suit has no metal frames or latches and leaves the hands of the wearer free

### Miami Midwinter Regatta

The fifth annual Miami Midwinter Regatta will be held February 14 and 15 in the deep water yacht harbor adjoining Miami Beach in Biscayne Bay, according to official announcement by the Miami Chamber of Commerce, under whose auspices the event is conducted.

The regatta will consist of two classes of events, one for open displacement boats, and one for express cruisers. In addition there will be long distance ocean races for express cruisers from Miami to Nassau, Key West, and Palm Beach, and aquaplaning contests.

The detailed program is as follows:

#### Friday, February 14

2:00 P.M.—Open displacement boats. Distance 10 miles. No handicap. Qualifying speed 20 m.p.h.

2:45 P.M.—Express cruisers. Distance 15 miles. No handicap. Qualifying speed 20 m.p.h.

3:30 P.M.—Aquaplanes.

#### Saturday, February 15

1:30 P.M.—Open displacement boats. Distance 20 miles. No handicap. Qualifying speed 20 m.p.h.

2:30 P.M.—Express cruisers. Distance 20 miles. No handicap. Qualifying speed 20 m.p.h.

3:15 P.M.—Aquaplanes.

Long Distance Ocean Races for Express Cruisers

Feb. 22, 9:00 A.M., Miami to Palm Beach Pier Head.

Mar. 1st, 9:00 A.M., Miami to Key West.

Mar. 8th, 9:00 A.M., Miami to Nassau.

A notable collection of trophies will be offered by the Miami Chamber of Commerce, aggregating more than \$1,000 in value, and in addition cash prizes amounting to \$100 will be offered for the aquaplaning events.

For the 1919 event, several new entrants will be in the field, a pair of high-powered express cruisers now under construction for Harry C. Stutz and A. C. Newby, of Indianapolis, by the Purdy Boat Wks., of Miami Beach, Fla., builders of the record holding Shadow III. It is predicted that the new boats will be somewhat faster than the Shadow and consequently a new record may be set.

### Defoe Ship Building Company

The Defoe Boat & Motor Wks., of Bay City, Mich., the well-known manufacturers of knock-down and stock boats will be changed to the Defoe Ship Building Company, and they are now prepared to specialize on what might be called medium-weight work, such as passenger steamers, tugs, river steamers, and are going in strong for the yacht business in both steel and wood.

The plant occupies a tract of fifteen acres with about 1,700 feet of water

front on the Saginaw River, and direct connection with the Michigan Central Railroad. The launching ways extend for 1,106 feet along the river front. New punch and machine shops have been erected as well as steel storage facilities.

While the plant has been engaged ninety-five per cent. on war work during the last year, half of the yard has been equipped to meet not only the present emergencies but also the demands of the future both in complete boats and knock-down boats of steel or wood. They expect to go in strong for the foreign trade in small commercial boats ranging from 50 to 200 feet in length and will put these out either finished or knock-down in steel. The knock-down boat work will be handled under a different department from the finished boat work.

The small work in both knock-down and finished boats will not be slighted in the least, it will be conducted in an entirely different way from previous years and on the basis of a big business. They wish their old clients on pleasure boat work to remember that they still highly value their patronage and mean to give equally good attention, and the best of service, to all orders from the smallest to the largest.

### The Dreadnaught Safety Suit

The Life Preserver Suit Co., Inc., of 1358 Broadway, New York City, is placing on the market a new improved safety suit. Their efforts in developing this improved suit were especially in the direction of eliminating the heavy iron frame and clamping found on other safety suits.

The suit, on account of not having any frame or clamping, or other mechanical parts that would be apt to interfere with the wearer's liberty, is very practical for general use. It will not only keep one afloat, dry and warm—safe from drowning and exposure—but the wearer with the suit on can attend to every kind of work unhindered. For instance, the wireless operator and the aerial navigator may operate his apparatus and machine respectively with the same comfort and ease as he would in his uniform or ordinary outfit.

One gets in to the suit through an opening on the top, consisting of flexible rubberized material that is easily rolled up and held fast by a simple ordinary buckle. The neck fits snug and keeps water out. Among other innovations this suit has elastic wristlets instead of the customary mittens. The wristlets make the

suit water-tight, leaving the hands free so that the wearer of the suit may use them freely. Mittens, however, are available for use in extreme cold as a protection for the hands against ice and cold winds.

### New Night Storm Signals

The United States Weather Bureau



Spanish V-bottom runabout "Sterling" powered with a 50 h.p. Sterling motor and capable of a speed of 23 m.p.h.

announce that on and after January 1, 1919, the following system of night storm warnings will be displayed on the Atlantic and Gulf Coasts.

Small craft warning—no night signal. Northeast storm warning—two red lanterns one above the other. Southeast—one red lantern. Southwest storm warning—a white lantern below a red lantern. Northwest storm warning—a white lantern above a red lantern. Hurricane or whole gale warning—two red lanterns with a white one between.

The day system employing flags and pennants remains unchanged.

### Britt Brothers' Plant Sold

The Coastwise Ship Engineering Corporation have purchased the plant, equipment, and stock of Britt Bros., at West Lynn, Mass., and plan to continue construction work at this yard until they can develop a larger plant at Point of Pines, Revere, Mass., on which an option has been obtained. The proposed site comprises over eight

acres with large frontage on the Pines River and direct connection with the Boston and Maine Railroad. The new plant will be equipped for constructing, repairing, and storing motor and sailing yachts and also marine ways for constructing and repairing fishing vessels and trawlers.

The officers of the corporation are Edmund C. Eastman, president; Chester E. Britt, vice-president and superintendent; William W. Rich, treasurer, and Carl H. Clark, naval architect.

### Advance of Prices

The Kermath Mfg. Co., of Detroit, Mich., announce an increase of \$30 on each and every unit power plant or motor outfit. Quotations on aluminum crank-cases and oil pans will be made only on request, on account of the extreme changes in prices on raw materials.

### Wm. H. Hand Resigns

The Navy Department has announced its acceptance of the resignation of William H. Hand, Jr., from the formal position of Aeronautical Mechanical Engineer at the Bureau of Construction & Repair, Navy Department, Washington, D. C. Mr. Hand will still be available for consultation, but was relieved of official connection at his request because of the necessities of his personal affairs. At the Bureau he was entrusted with the design of hulls for large flying boats which have been successfully employed in patrolling coastal waters around the English Channel and also to some extent on this coast.

### Technical Advertising Counsel

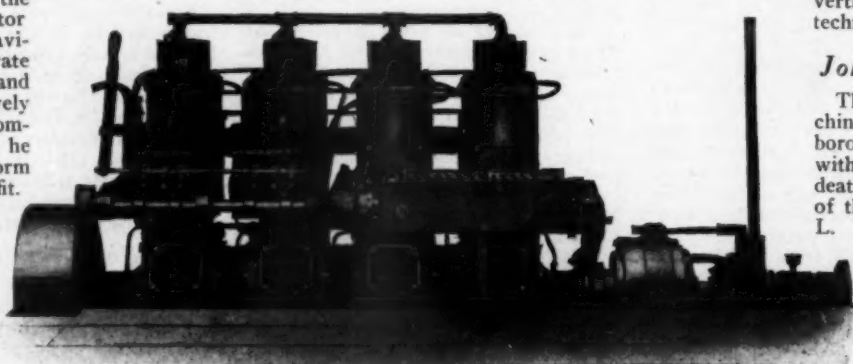
Having completed his work for the Ordnance Department, U. S. A., Rex W. Wadman announces the re-establishment of his New York Office at 16 Beaver St., New York City, and that he is now in a position to devote his entire time to rendering efficient advertising counsel to technical advertisers.

### John L. Wright

The Wright Machine Co., of Owensboro, Ky., announce with deep regret the death of the president of the company, John L. Wright, on November 26.

Through the death of Mr. Wright the marine motor industry has lost one of its best progressive members.

The Wright Machine Company will continue the manufacture of their well-known line of gasoline and kerosene marine motors of the overhead valve type.



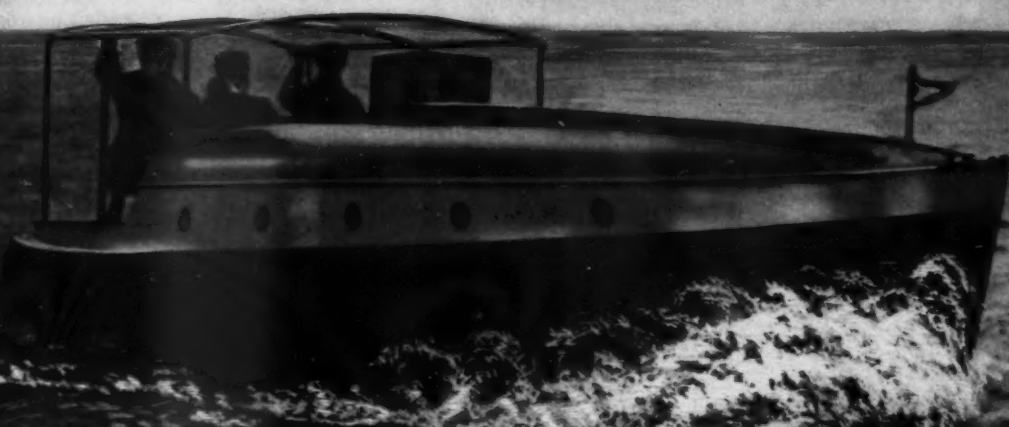
A 30 h.p. motor built by the Missouri Engine Co. of St. Louis, Mo. These motors are built in one-, two-, three-, and four-cylinder models and operate on kerosene fuel oil or crude oil



# VALENTINE'S VALSPAR

The Varnish That Won't Turn White

—the Varnish picked for the *Piccaninny*!



**Q**UEEN of the Delaware is the speedy *Piccaninny*! And she's Valsparred, of course. Her owners, Com. J. V. Bell and Mr. Howard Taylor, of the Camden Motor Boat Club, know that the varnish plays a mighty important part in keeping a fast boat at top-notch. So every season the "*Pick*" gets her new dressing of Valspar. And every season she comes out winner! Valspar is waterproof and weather-proof. It won't turn white. It's the ideal varnish for all boats—including *yours*. Send today for booklet.

## VALENTINE & COMPANY

Established 1832—Largest Manufacturers of  
High-grade Varnishes in the World

New York  
Chicago  
Boston

VALENTINES

Toronto  
London  
Amsterdam

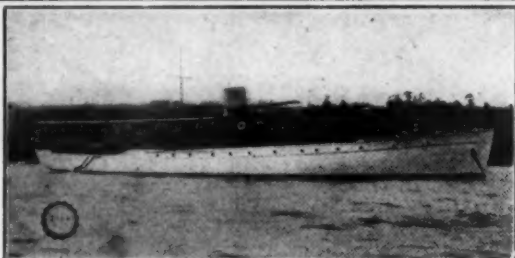
W. P. FULLER & CO., Agents for Pacific Coast;  
San Francisco Los Angeles Sacramento  
Oakland Stockton San Diego Pasadena  
Long Beach Santa Monica Portland  
Seattle Tacoma Spokane Boise

Naval Architects  
and  
Yacht Brokers

# COX & STEVENS

15 William St., New York  
Telephone—1378 Broad  
Cable—BROKERAGE

We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request.



No. 2366—For Sale—Particularly desirable steel, twin screw cruising power yacht; 126 x 18.6 x 6 ft. Recently built in best manner; exceptionally able craft. Speed 12-14 miles; two 125-150 H. P. 6 cyl. air-starting motors. Large deck dining saloon; main saloon, five staterooms, two bathrooms, etc., aft. All conveniences. Handsomely furnished. Cox & Stevens, 15 William St., New York.



No. 148—For Sale—Steel, flush deck, steam auxiliary schooner yacht; 130 ft. overall, 110 ft. waterline, 26 ft. beam, 15.6 ft. draft. Speed under power 9 knots; compound engine; electric lights; all conveniences. Extremely able craft; heavily constructed. Cox & Stevens, 15 William St., New York.



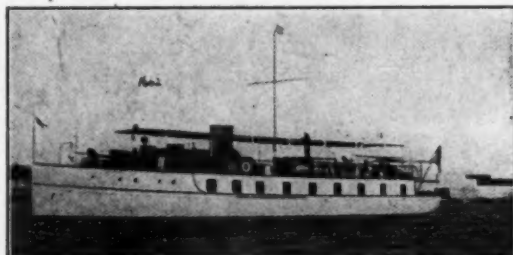
No. 1796—For Sale or Charter—Very roomy, twin screw cruising power yacht, 69 x 17 x 4 ft., adapted for Florida service. Speed 12-14 miles; Standard motors. Large dining saloon, six staterooms, three bathrooms; all conveniences. Cox & Stevens, 15 William Street, New York.



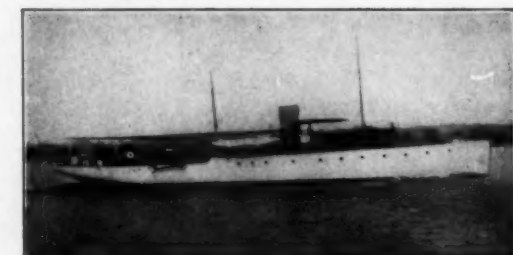
No. 3169—For Sale—(In Florida waters)—Very roomy, light draft, twin screw power yacht; 84 x 16.6 x 3.6 ft. Large deck space. Speed 12-14 miles. Dining and main saloons, three staterooms, three toilet rooms; hot water heating plant, electric lights, etc. Cox & Stevens, 15 William Street, New York.



No. 3427—For Sale at Low Figure—Fast, roomy, twin screw cruising power yacht; 74 x 14 x 3.9 ft. New 1916; Lawley built. Speed up to 16 miles; two 6 cyl. "Speedway" motors 110/120 H.P. each. Large saloon, three staterooms, shower bath, etc. Cox & Stevens, 15 William Street, New York.



No. 1662—For Sale or Charter—Attractive 90 ft. twin screw gasoline houseboat; speed 10-12 miles. Large saloon, four staterooms, two bathrooms; all conveniences. Handsomely furnished. Cox & Stevens, 15 William St., New York.



No. 2030—For Sale or Charter—Modern, very roomy, twin screw power yacht, 124 x 18.6 x 6 ft. (Now has after deckhouse.) Very economical to operate. Large dining saloon and social hall on deck; main saloon, six staterooms, two bathrooms and three toilets aft. Handsomely finished and furnished. Cox & Stevens, 15 William Street, New York.



No. 3231—For Sale or Charter—Particularly desirable 23 ft. steel yacht. Speed up to 17 miles. Recent build. Dining saloon and social hall on deck; five staterooms, two bathrooms, etc. Cox & Stevens, 15 William Street, New York.



No. 3539—For Sale—Fast, up-to-date 60 ft. bridge deck cruiser. Speed 18 miles; 8 cylinder Van Blerck motor (new 1917). Double stateroom, saloon, large galley, etc. Cox & Stevens, 15 William St., New York.



No. 3541—For Sale or Charter—Particularly desirable 100 ft. steel twin screw cruising power yacht. Very attractively finished and furnished. Speed up to 15 miles; two 6 cyl. air-starting and reversible Standard motors. Large dining saloon and social hall on deck; five staterooms, bath, two toilet rooms, etc. Cox & Stevens, 15 William Street, New York.



No. 3151—For Sale or Charter—Modern, twin screw gasoline houseboat; 75 ft. x 17 ft. x 3 ft. 6 in. Speed 10-12 miles. Large deck saloon; four staterooms, two bathrooms, dining saloon; all conveniences. Special opportunity. Cox & Stevens, 15 William St., New York.



No. 3035—For Sale—Fast and very roomy bridge deck cruiser; 47 x 10 x 3 ft. Speed 16 miles; 100 H. P. 6 cyl. 4 cycle motor. Separate galley, saloon and single stateroom forward, besides double stateroom and toilet room aft. Electric lights. First class condition. Cox & Stevens, 15 William St., New York.



No. 1378—For Sale—Bridge deck cruiser; 40 x 9 x 3.6 ft. Speed 11 miles. Double stateroom aft. Saloon and galley forward. Equipped with 6 cyl. 40 H. P. motor located under bridge deck, absolutely shut off from forward and after cabins. Price exceptionally low. Cox & Stevens, 15 William St., New York.

NAVAL ARCHITECTS  
ENGINEERS  
BROKERS  
MARINE INSURANCE

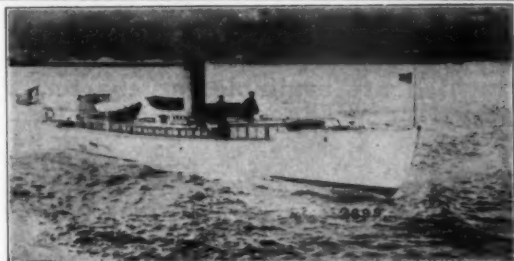
## GIELOW & ORR

52 BROADWAY, NEW YORK

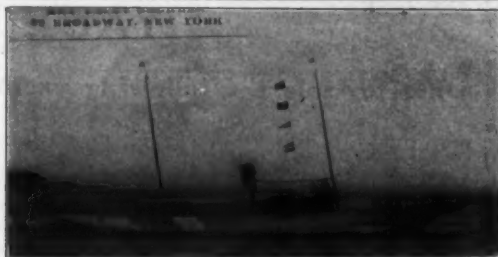
Telephone: 4873 Broad  
Cable Address:  
Crogie, New York  
A.B.C. Code

ALSO: CHICAGO STEAMBOAT EXCHANGE, 350 NORTH CLARK STREET, CHICAGO

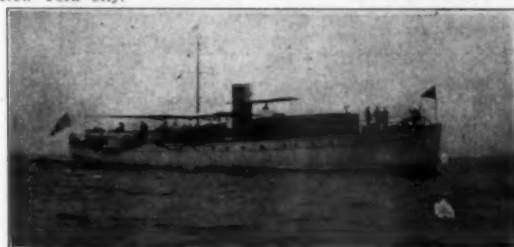
We have a most complete and up-to-date list of power yachts of all sizes, sail, auxiliary and houseboats on file in our office, kept constantly up-to-date by a thorough and comprehensive canvass of the entire yachting field from time to time. We are in a position to submit full information on any type of boat upon request. FOR SOUTHERN CRUISING this winter we offer a number of very desirable POWER HOUSE BOATS and POWER YACHTS which are specially adapted for FLORIDA waters.



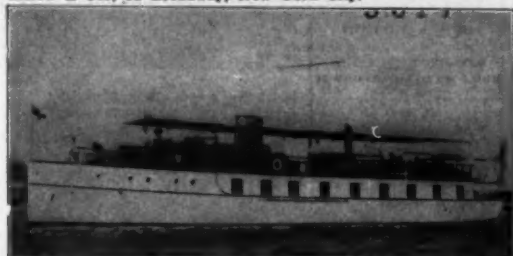
No. 2399—For Sale—Reasonable—Twin screw express steam yacht, 112 feet length, double stateroom and saloon. Built by Herreshoff. Owned by gentleman's yacht. Never been in patrol service, in perfect condition. Suitable for ferry or racing yacht tender. Gielow & Orr, 52 Broadway, New York City.



No. 232—For Sale—Handsome steel single screw steam yacht, 145 feet. 2 staterooms and deck dining saloon, also social hall on deck. Triple expansion engine and maximum speed 14 knots. Located New York. Gielow & Orr, 52 Broadway, New York City.



No. 4591—For Sale—Handsome twin screw steel sea going motor yacht, 126 feet length, 18 1/2 feet beam, 6 feet draft. Built by Seabury. 5 staterooms, all modern equipment, perfect condition and located Great Lakes. Gielow & Orr, 52 Broadway, New York City.



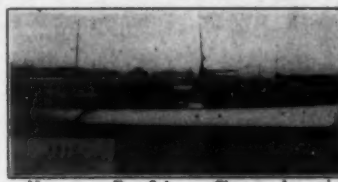
No. 3617—For Charter—Desirable twin screw motor houseboat, 90 feet length, 17 feet, 6 inches beam and speed 10 miles. 4 staterooms and saloon. Sleep 12 persons. Located Florida in commission. Gielow & Orr, 52 Broadway, New York City.



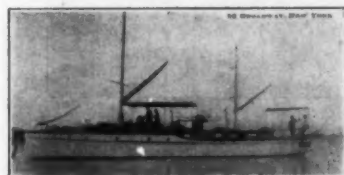
No. 3241—For Sale—Handsome auxiliary keel schooner, 114 feet on deck, 10 feet draft, built by Lawley, steel construction, 3 staterooms and powered with 6 cylinder Standard motor and giving speed 8 knots. One of best available yachts of type in perfect condition. Gielow & Orr, 52 Broadway, New York City.



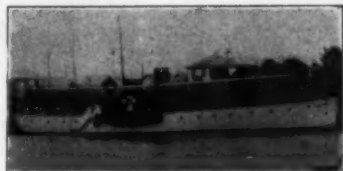
No. 5951—For Sale—40 ft. Hand express cruiser. New 1917. Van Blerck motor. Speed 20 miles. Best construction. Able sea boat. Fully equipped. Price reasonable. Gielow & Orr, 52 Broadway, New York City.



No. 3957—For Sale or Charter—Attractive 75 ft. cruiser, beam 13 ft., draft 3 ft. 6 in. Standard engine, speed 10 knots. One double two single staterooms. Accommodate five persons. Electric lights, hot water heat. Bargain. Gielow & Orr, 52 Broadway, New York City.



No. 4606—For Sale—Very able 64 foot cruiser, 13 ft. 6 in. beam, 4 ft. draft, 6 cyl. Heavy Duty motor new last year. Speed 10 knots. One double one single stateroom opposite main saloon. Accommodate five persons. Boat heavily built, especially for offshore cruising. Price reasonable. Gielow & Orr, 52 Broadway, New York City.



No. 4199—For Sale—Desirable twin screw flush deck cruiser, 89 feet, beam 15 feet. Speed 12 miles. 3 staterooms and main saloon. Hot water heated and electric lighted, fully equipped and inspectable New York. Gielow & Orr, 52 Broadway, New York City.



No. 5850—For Sale—Modern 50 foot Express Hand cruiser, speed 20 miles, built 1916. 8 cylinder Van Blerck motor. Sleeping accommodations 4 persons. Completely equipped, inspectable near New York. Gielow & Orr, 52 Broadway, New York City.



No. 5455—For Sale—Desirable 48 foot cruiser having 14 feet beam, 34 inches draft, built 1915. Accommodations gives stateroom and saloon fully equipped. Speed 10 miles. Inspectable near New York. Gielow & Orr, 52 Broadway, New York City.



No. 5065—For Sale or Charter—Handsome sea going motor cruising yacht, 106 feet O.A., 13 feet 6 inches beam, 5 feet 10 inches draft. Standard motor, speed 15 miles. 4 staterooms and saloon, sleeps 9 persons. Yacht well kept, fully equipped and inspectable New York. Gielow & Orr, 52 Broadway, New York City.



No. 4441—For Sale—Able offshore cruiser, 45 ft. length, 11 ft. beam, 3 ft. 6 in. draft. Extra heavy construction. Electric lighted. Heavy Duty Sterling motor. Speed 10 miles. Accommodates four persons. All perfect condition, fully equipped. Inspectable New York. Price low if sold before laying up. Gielow & Orr, 52 Broadway, New York City.



# TAMS, LEMOINE & CRANE

## NAVAL ARCHITECTS AND YACHT BROKERS

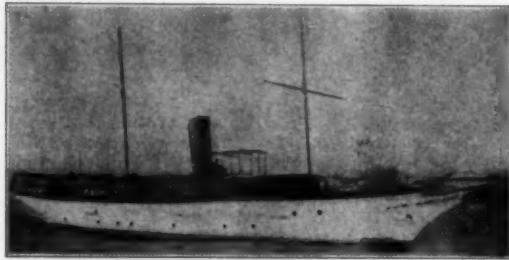
Telephone  
4510 John

52 Pine Street  
New York City

Offer for sale the following yachts, some of which are available for charter



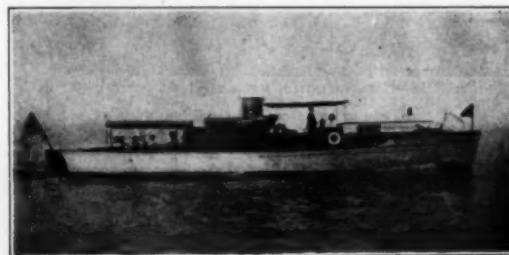
No. 243—Sale—Charter—Twin screw steam houseboat, 116 ft. x 21 ft. x 4 ft. draft. 4 staterooms, 3 bathrooms, dining saloon and smoking room.



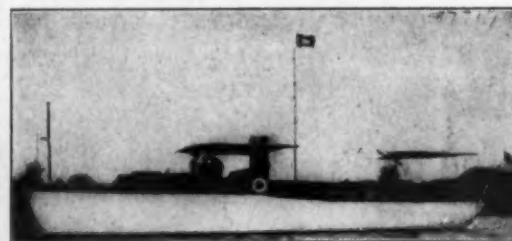
No. 7987—Sale—Charter—106 ft. cruising motor yacht; speed 13 knots; 4 staterooms, bathroom, main saloon, deck dining saloon, etc. Full equipment.



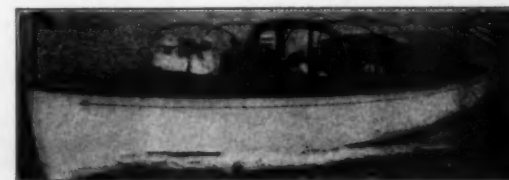
No. 18—For Sale—Estate anxious to sell fast cruising steam yacht, 147 ft. x 17 ft. x 7 ft. 3 staterooms, bathroom, dining saloon, sitting room.



No. 8662—Sale—Twin Screw Cruiser. Speedway motors, new 1916. Speed 15 miles. Stateroom, saloon, large cockpit and bridge deck.



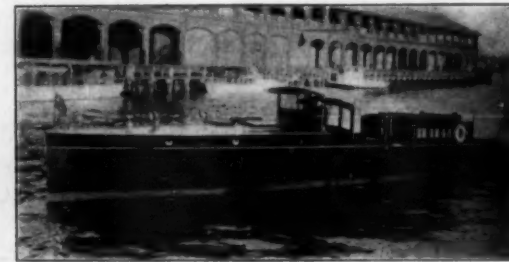
No. 7717—Sale—Raised Deck Cruiser, 60 ft. x 11 ft. x 3 ft. 6 in. 50 H.P. Speedway motor. Saloon, stateroom, galley, etc.



No. 8713—For Sale—Attractive Day Cruiser, 50 ft. x 8 ft. 3 in. x 3 ft. 1 in. draft. 6 cylinder Holmes motor. Speed 13 miles.



No. 1847—Sale—Charter—Desirable Houseboat, 85 ft. x 18 ft. x 28 in. draft. 4 staterooms, 2 saloons, bathrooms, etc.



No. 7121—Sale—58 ft. fast day cruiser. Twin screw Sterling motor. Speed 26 miles.

WILLIAM GARDNER  
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# WILLIAM GARDNER & CO.

Naval Architects, Marine Engineers and Yacht Brokers

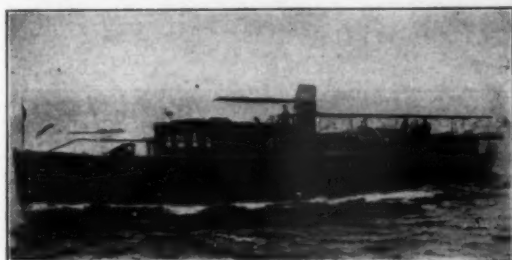
Telephone Call  
8638 Bowling Green

1 Broadway, New York

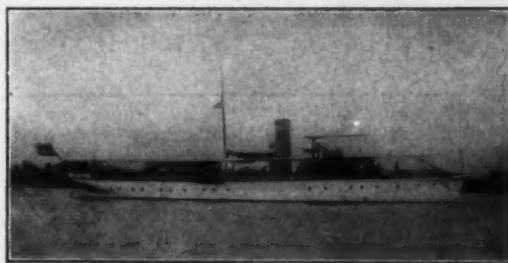
Cable Address  
Yachting, N. Y.

We have a complete list of Yachts of every description for sale and charter

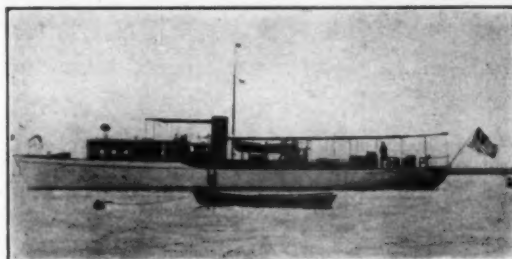
Plans, Photos and full particulars furnished on request.



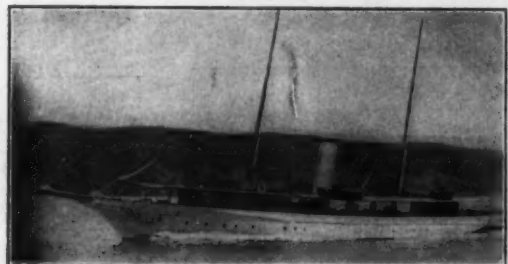
No. 1963—For Sale—Twin screw power yacht, 100 x 16.5 x 4.6, two 20th Century engines, 60/75 H.P. each. Deck dining saloon, 4 staterooms, main saloon, etc.



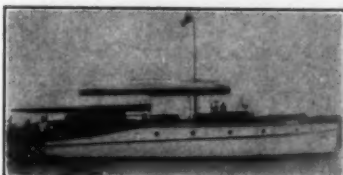
No. 646—For Sale or Charter—Steam yacht 125 ft. x 17 ft. x 6 ft. draft. 5 staterooms, 3 bathrooms. Dining saloon and social hall on deck.



No. 1081—For Sale—Twin screw, 90 ft. power yacht; splendid accommodation. Recently overhauled and 2 new Standard engines, 4 cylinder, 75 H.P. each, installed 1916. Exceptionally able and fully found.



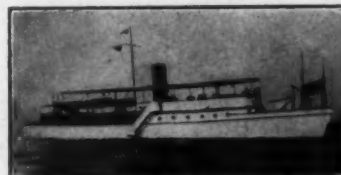
No. 238—For Sale—Steel steam yacht, 170' x 31' x 8' draft. Large dining saloon, social hall and smoking room on deck; 5 staterooms, 3 bathrooms, etc. Completely equipped.



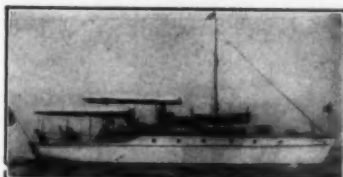
No. 1722—Raised deck cruiser, 55 ft. x 13 ft. x 3.6. Lamb motor. 2 staterooms, main saloon, salley, etc. Price very reasonable.



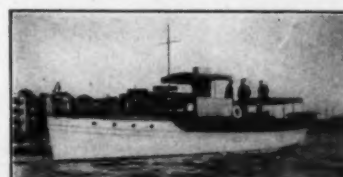
No. 1736—For Sale—Twin screw power yacht, 97 ft. x 16 ft. 7 in. x 3 ft. 6 in. 4 staterooms, bath room, deck dining saloon, etc.



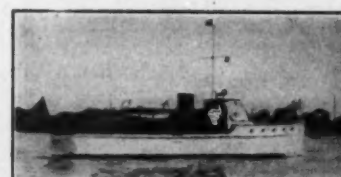
No. 934—Power Yacht, 92 ft., 100/125 H.P. 20th Century motor, splendid deck space.



No. 1270—For Sale or Charter—Raised deck cruiser 55 x 13 x 4.6. Standard engine 32/37 H.P. Has two staterooms, main saloon, salley, etc. William Gardner & Co., 1 Broadway, New York.



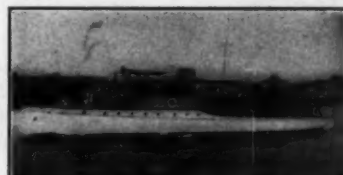
No. 1914—For Sale—Raised deck and cabin house cruiser. 50 x 10 x 4. 50 H.P. motor. Price low.



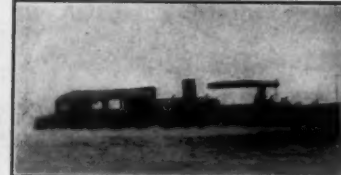
No. 2386—New Patrol type, 54 x 11.3, eight cylinder Van Blerck, speed 17 miles.



No. 1937—Diesel Power Yacht, 110 x 18, two 6 cylinder 150/180 H.P. engines, low fuel cost.



No. 1738—Raised Deck Cruiser, 65 x 11, six cylinder motor, good accommodation.



No. 2358—New Express Cruiser, 45 ft., eight cylinder, 200 H.P. Van Blerck, speed 23 miles.

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Advertising Index will be found on page 80

HENRY H. JENNINGS

HERMAN JAGLE

# H. H. JENNINGS COMPANY

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No. 1 Broadway New York City

Marine Insurance

Our list comprises all the available yachts for sale and charter. Below are a few of our offerings. Our knowledge of the yachts we offer, and our 25 years' experience in the business insure satisfaction to any one buying or chartering a yacht through this office

SEND FOR OUR CATALOGUE



1497—50 ft. cruiser. Two staterooms, main cabin, etc. Speed 11 miles.



1942—125 ft. twin screw power yacht. Six staterooms, dining saloon, main saloon, two baths, etc. Speed 12-14 miles.



1811—60 ft. twin screw express cruiser. Recent build. Speed up to 26 miles.



1869—42 ft. cruiser. Stateroom and main cabin, sleeps five. Speed 10-12 miles.



2001—50 ft. cruiser. Double stateroom, main cabin, etc. Sleeps 6 or 7 people. Speed 13 miles.



1991—65 ft. cruiser. Double stateroom, main cabin, etc. Speed 11 miles.



4287—Sale or Charter—90 foot power houseboat. Five staterooms, saloon, bath, etc. Standard motor. Speed 11 miles. In Florida waters. Price attractive.



1963—58 foot Twin Screw Express Cruiser. Double stateroom; two berths in saloon; Speed up to 25 miles.



4225—51 foot power houseboat. Three staterooms, main saloon, etc. Speed 8 miles.



1714—58 foot Twin Screw Express Cruiser. Two staterooms, etc. Speed 25 to 30 miles.



1704—55 foot Twin Screw Cruiser; Double stateroom; two berths in saloon. Speed 10 miles.



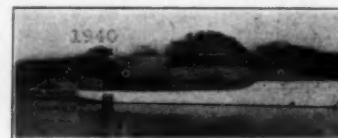
4231—Sale or Charter—85 foot power houseboat. Five staterooms, saloon, bath, etc. Speed 10-12 miles. In Florida waters.



1431—68 foot Twin Screw Power Yacht. Two double staterooms; dining saloon and deck saloon. Speed 12 to 14 miles.



1149—45 foot cruiser. Double stateroom, saloon, etc. Speed 10 miles.



1940—65 foot cruiser. Three staterooms, saloon, bath, etc. Speed 10-11 miles. Ideal for Florida.



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 Cut one inch deep, one column wide..... \$2  
 Cut 1½ inches deep, 1½ columns wide..... \$5  
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### Opportunities for the Motor Boatman

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offer of the month. Please mention MoToR BoatinG.



#### FOR SALE AUXILIARY SCHOONER YACHT DIABLESSE

Length over all 52 ft., length water line 39.6 ft., beam 15 ft., draught 7 ft., tonnage 21 gross, 6.2 tons net. Engine, 25 H.P. heavy duty. Speed 8 miles. 2 staterooms and main cabin. Sleeping accommodations for 7 aft, and three in forecabin. Yacht fully found, and completely overhauled last Summer. Under sail, fast, able and nimble. Now at City Island, Nevin's Yard. Address all inquiries to L. J. O'Reilly, P. O. Box 1740, New York City.

FOR QUICK DELIVERY, at low prices, high grade, heavy duty, marine crude oil engines of 40, 60, 75, 85, 112 and 150 B. H. P. Recent changes in owner's plans makes these engines available. Jacobson Engineering Co., 5 Second Ave., Rensselaer, N. Y.

USE "SNAPPER" ENGINES for your small boat. They are a big little engine built by The Automatic Machine Co., Bridgeport, Conn.

FOR SALE or EXCHANGE—Auxiliary sloop, 8 months old, Standard engine, 48 ft. x 14 ft. x 3 ft. One toilet, sleeps six, fully found. Owner will exchange for a 45 ft. cruiser or sell outright. Further information will gladly be given. Jas. R. Hensler, Toms River, N. J.

FOR SALE—New V bottom runabout hull, 22 ft. long, 5 ft. 3 in. beam. Designed by a naval architect, and built right. All fastenings are bronze and brass. 16 gal. copper tank, bronze shaft log and stuffing box, Robbin's Strut. If interested address Samuel Thurston, Rockport, Mass.



For Sale—39 ft. 9 in. long, 8 ft. beam Cypress planked and copper riveted; first class sea boat in good condition; 3 cyl. 4 cycle engine, 20 H.P., A-1 condition. Sell at a sacrifice. W. H. Bulkley, Points aux Bois, Michigan.

A few medium and high speed, one, two, four and six cylinder, four-cycle marine motors, new or rebuilt. Reliance Motor Boat Co., 210th Street and Harlem River, New York City.

FOR SALE—One brand new Kemp Machine Works, Aerial engines, Model 34, complete, has never been used. Address Box 100, care of MoToR BoatinG.



Are you a married man? Do you long for a summer home, where the wife and kids can grow strong and healthy—a place on the Sound, or the river, or bay—a swim at evening—a cruise each week end to some beautiful spot of coastland—a home all your own—and yet all within twenty minutes of the office? Do you wish to get back to real life, the life you dreamed of when a boy? If so, communicate with G. E. B., Box 25, MoToR BoatinG.

Marine and automobile engines 1 to 100 H.P. Best makes—good condition—very low prices. State your power needs. We take engines in trade. What have you? Magneto, coils, carburetors, mechanical oilers, water pumps, etc. Also car parts of every nature—sacrifice prices. Write about your requirements.

Badger Motor Company, Milwaukee, Wis.

CANADIANS, Second-hand engine bargains. Send for list.

#### GUARANTEE MOTOR COMPANY

73 Bay Street, North Hamilton, Ont., Canada

BOSCH Magnetos: All types \$10.00 each and up—Coils—Remy, Splittorf, etc., \$3.00 and \$5.00—Low Tension Magnetos \$3.50—Presto Tanks \$5.00—Leather Cushions \$1.00—Spot Lights \$3.40—Lighting Generators \$20.00—Carburetors all types \$5.00 and \$8.00—Auto Motors, both water and air cooled, all sizes \$10.00 each and up. Write for bulletin. Johnston, West End, Pittsburgh, Pa.

#### Trimount

Whistle Blower Outfits  
Blower runs by friction  
contact with engine fly-  
wheel. Whistle of brass,  
nickel-plated.

Made in 3 sizes.

20 Heath Street Boston, Mass.  
(Factory: 292 Whiting Ave., East Dedham, Mass.)

#### Trimount Rotary Hand Blows Pumps

All bronze composition.  
Suction lift 6 to  
20 feet. A lifelong  
convenience.

Made in 3 sizes.

TRIMOUNT ROTARY POWER CO.

20 Heath Street Boston, Mass.  
(Factory: 292 Whiting Ave., East Dedham, Mass.)

## The Victory Number

The Victory Number of MoToR BoatinG (February issue) will contain several features of intense human interest.

Foremost among the many subjects appearing in this special edition will be the review of the great part played by America's boatmen in the Winning of the War.

Their pictures, experiences and little anecdotes of wartime activities will naturally be of compelling interest—all of which makes advertising space in this number of more than usual value.

We are prepared to suggest copy ideas in keeping with the character of the editorial matter in February. We await your instructions.

**MoToR BoatinG, 119 West 40th St., New York**

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Advertising Index will be found on page 80

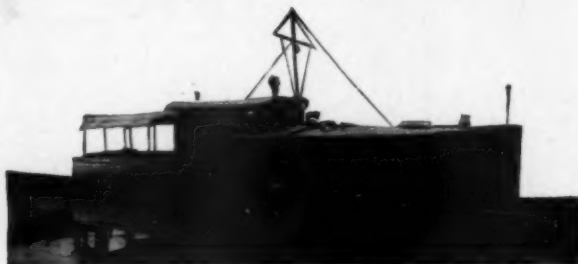
## THE MOTOR BOATING MARKET PLACE

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 Cut one inch deep, one column wide..... \$2  
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FOR SALE—IMMEDIATE DELIVERY



EMMA BELLE II

Owned by Mr. Harry C. Stutz, Indianapolis. Designed and built by Great Lakes Boat Bldg. Corp.

A 38 Foot Shallow draft (semi-tunnel stern construction) Express Cruiser drawing only 24 inches of water. An ideal boat for Southern Cruising.

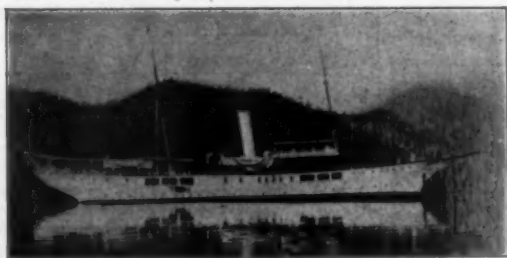
This boat, built in July, 1918, has only cruised 500 miles. Is in full commission, ready for immediate delivery. Mr. Stutz is having us build a larger boat, hence his reason for disposing of this one.

This boat is an excellent example of the Great Lakes Modified V-Bottom design, a real sea boat with splendid accommodations for her length. Arrangement consists of:—galley; main cabin with Pullman berths, handsomely upholstered in mohair velvet; completely equipt lavatory; full sized clothes locker; glass enclosed bridge deck; together with a protected after cockpit. Interior finish in mahogany throughout.

#### YOUR OPPORTUNITY TO GET A COMFORTABLE CRUISER NOW!

Wire or write for additional information, blueprints, etc. All enquiries will receive prompt attention.

GREAT LAKES BOAT BUILDING CORPORATION  
MILWAUKEE, WISCONSIN



No. 135—For Sale—Ocean-Going Steam Yacht; built to Lloyd's Highest Rating; length 214 ft.; handsomely fitted and furnished and now ready for sea. FRANK BOWNE JONES, YACHT AGENT, 29 Broadway, New York.

FOR SALE—1918, 4 H.P. Caille-Perfection engine, Standard reverse gear, Hyde propeller, ¾ in. W-C, Stuffing-box. Cost \$147.00. Will sell for \$105.00. Owner building new boat. Geo. T. Hill, Pascoag, R. I.

Complete copies of MoToR Boating, since first issue, June 1909. Desirable for club library or architect's office. Also bound volumes of Yachting for 1910. Make offer. MoToR BoatinG, Box 11.

Draughtsman and tracer—On ship and yacht hull work. Two men required in office of naval architects and marine engineers. Preferably men with previous experience along these lines. Location New York. Box 12, MoToR BoatinG.

EXCHANGE—Have 50 ft. Glass Cabin cruiser, fully equipped. Standard engine. Will exchange for fast speed boat with good engine. State particulars. W. L. Meffert, 135 B'way, N. Y. C.

WANTED—Raised or Bridge Deck Cruiser. 50 to 60 feet long, mahogany finish, high grade motor. Address—J. M. Hayden, City Hall Garage, Norfolk, Virginia.

## Be an Expert!

Study MoToR BoatinG's Practical Series this winter and you will command the respect of your fellow boatmen next season. This remarkable series covers every phase of boating and will equip you with a knowledge that places you in a class with the experts. MoToR BoatinG's Practical Series is the work of thousands of the most able boatmen in the game.

### MoToR BoatinG

119 WEST 40th STREET

NEW YORK

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# NAVAL ARCHITECTS & YACHT BROKERS

**Thomas D. Bowes, M. E.**  
NAVAL ARCHITECT AND ENGINEER  
Office:  
Lafayette Bldg., Chestnut and Fifth Sts.  
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**COX & STEVENS**  
Engineers and Naval Architects  
Yacht Brokers  
15 WILLIAM STREET, NEW YORK CITY  
TELEPHONE 1375 BROAD

**THE EDWARDS ENGINEERING CO.**  
NAVAL ARCHITECTS & ENGINEERS  
DESIGNERS OF  
**OIL ENGINE YACHTS**  
AND  
**COMMERCIAL VESSELS**  
12 SO. 7TH ST. PHILADELPHIA, PA.

**William H. Hand, Jr.**  
NAVAL ARCHITECT  
NEW BEDFORD, MASS.  
**HAND-V-BOTTOM DESIGNS**  
Write for 48-page illustrated catalog

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**HARRY W. SANFORD**  
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Desirable yachts of all types for sale and charter  
Telephone 940 Vanderbilt

**TAMS, LEMOINE & CRANE**  
Yacht and Ship Brokers  
Naval Architects  
Marine Engineers  
52 Pine Street New York

## Making Gasoline from Gas (Continued from page 14)

the inner series of pipes to an expansion valve or expansion engine and then back through the outer series of pipes. When the gas is allowed to expand it absorbs heat from the gas still under pressure in the inner pipes. This chilling of the gas causes considerable gasoline to condense and this is collected in the accumulator tanks through which it passes before reaching the expansion apparatus.

The gasoline which still remains in the gas after expansion is collected in the expansion accumulator tank, where it is subjected to the lowest temperature (below 32 degrees Fahrenheit) and through which it passes before entering the double coils. After the final passage through the double coils the gas is free from gasoline and water and is disposed of either by return to the owners of the wells, who then sell the gas or it is sold directly by the recovery company.

As both the crude oil and natural gas contain more or less moisture, and this moisture is condensed along with the gasoline, provision is made to draw this water as it separates by gravity in the accumulator tanks. Finally, the gasoline is passed through a "make tank," where the final separation of the gasoline and water is accomplished before the gasoline enters the storage tanks.

The gasoline obtained by this method is extremely volatile and of high gravity. It is often so volatile that the losses in shipping and handling would be excessively high and it would not meet the specifications required by transportation laws covering the shipment of gasoline by rail or water. This difficulty is overcome by blending the gasoline with heavier still-run distillates, such as naphtha.

## My Ideal Runabout

(Continued from page 18)  
new series must be the work of amateur designers. The designs may be submitted any time up to May 15, 1919. They must be in black ink on white paper or tracing cloth but may be to any scale the designer prefers.

Each design submitted must include an outboard profile, arrangement plans, sections, construction details, a full set of lines, a table of offsets, and a description of the boat of not over 2,500 words. We would suggest that all figures and lettering on the plans be of such size that they will be legible after the plans are reduced to a size suitable for reproduction in the magazines. We would also suggest that the contestants send in their designs at the earliest possible date and thus avoid the rush as the closing date approaches.

For each set of plans which are published MoToR BoatinG will pay the designer \$35 in cash. At the end of the series the subscribers to MoToR BoatinG will be given an opportunity to indicate their preference and the amateur designer whose plans receive the greatest number of votes will be awarded a prize of \$65 worth of boat equipment of his own selection.

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## BRUNS, KIMBALL & CO., Inc.

115 Liberty Street New York City  
Offer over 200 re-built engines, backed by a strict guarantee, at especially attractive prices. List will be sent free for the asking. Your present engine will be taken in part payment for a new Sterling, Kermach, Grac-Prior, Dorman, Milwaukee, Universal, 4 cycle; Buick, Hartford and Arrow, 2 cycle; Milwaukee heavy oil engine, simple and economical. Burnoil, heavy duty 4 cycle heavy oil engine, quick starting, economical, easy to operate. Write for offer

**KAURI**  
Waterproof Spar Varnish  
For all OUTSIDE AND INSIDE work. Dries Salt Water. Guaranteed.  
Brooklyn Varnish Mfg. Co. Brooklyn, N. Y.

**LOWEST PRICE BOAT IN THE WORLD**  
\$89 for 15-foot boat finished ready to run with either inboard or outboard motor.  
Builder-Agents Wanted  
\$25 for complete k.d. boat - outboard - garage planing.  
See Catalogue - 20 Boats  
BRUNS, KIMBALL & CO., Inc.  
631 1/2 1st St., Saginaw, Mich.

**CROCKETT'S**  
Spar Composition  
—the original and best known exterior marine varnish in the world. The best Interior Finish is Crockett's  
NO. 1 PRESERVATIVE  
Send for Catalogue  
The David B. Crockett Co. Bridgeport, Conn.

**Hacker - Kraft - Boats**  
Most Refined and Efficient  
Runabouts Ever Produced.  
John L. Hacker Boat Co., DETROIT MICHIGAN

AVOID disaster by using  
A DIBAGO compass on  
that boat. All materials  
first class. No rubber  
gaskets to rot. A very hard  
pivot and high-grade jewel.  
Very degree circle on dial.  
Brass and mahogany  
hull. Also new course  
finder and bearings instru-  
ment. Send for descriptive  
catalog.  
EUGENE M. SHERMAN  
Box 3 Bellevue, Wash.



**Paint DEVOE Paint**  
The Most Perfect Marine Paint  
DEVOE & RAYNOLDS CO. INC.  
NEW YORK CHICAGO

**Preservo**  
Waterproofs and Preserves  
Canvas, ROBERSON  
PRESERVO COMPANY (formerly Robeson Preservo Products Co.)  
Port Huron, Mich.  
Eastern Branch: 257 Western Ave., Boston, Mass.  
Canadian Branch: The Hunter-Johnson Co., 311 California St., San Francisco, Cal.  
Distributors for Pacific Coast

**SAVE GASOLINE**  
Get More Power, Greater Speed, Smoother Operation, Longer Service, New Stromberg Carburetor for Marine Engines "Save It."  
Write—Give motor specifications, name boat and engine, number of cylinders, bore and stroke.  
STROMBERG MOTOR DEVICES CO.,  
Dept. 144  
64 E. 25th St., Chicago, Ill.



# The Submarine Chaser as a Fighting Ship

(Continued from page 9)

were orders. New York Bay was a field of floating ice. The gale took the boats further and further off shore. They soon became separated and the wireless operators were too unaccustomed to such experiences to get more than an occasional word or letter so that the situation became serious. The boats were not heated except by an occasional oil heater which had to be held in place and association with which in a closed cabin for even fifteen minutes meant a sure sore throat. Ten degrees below on the bridge, but the biting nor'wester made it seem a hundred below. But on and on the boats went, each taking the course which its commanding officer thought would take him around Montauk. Sea sickness became prevalent but not a man faltered. The black gang, with buckets tied around their necks, stuck at their posts. The power plants were put in the engine-rooms of these boats to run continuously and to stand up under just such conditions. And run continuously and stand up they did. Not one of the eighteen motors in the six boats minded the outside conditions. It was just a case of feed fuel and lubricating oil and the motors could be relied upon with unquestionable faith. After fifty-four hours of constant running and almost unheard of hardships, the little fleet steamed into New London, cheered to the echo by the hundreds of reservists who had expected them for two days.

While too much credit can not be given to the deck officers and crews of these tiny warships, which have stood up in all kinds of weather and proven that it is possible to get a good sea boat within so short a length as 110 feet, boats which could go out to sea and stay out as well, yet the engine-room crews should not be forgotten. Their performances have been fully as striking and deserving of credit as any. Entirely green at the start, many of them hardly knowing the difference between a flywheel and a spark plug, yet they have developed into a most efficient body of men and so know their duties that trouble with their charges, the three six-cylinder 200 h.p. Standard motors, is an unknown word. There was no such thing with these Standard engines as a motor refusing to start or reverse. A hot bearing was also an unknown quantity. It was consistent service all the time, under all conditions—as Admiral Usher remarked to the writer recently, "The motors were 100 per cent efficient."

The stories which the engine-room force of the different chasers tell may vary as to individual experience, but they all agree on the point of reliability of the Standard engines. Of the 300 odd chasers in commission at the present time, not one chief has a harsh or unkind word to say about the motors or the crews which attended them. The praise for this particular make of power plant was universal, so universal in fact that it appeared to be a pre-arranged propaganda, which of course it was not.

The difficulties under which the black gangs worked were almost unbearable at times, yet there is not a single record of a boat going down and out on account of engine trouble. With the seas breaking clear over the little ships and as one officer expressed it, a roll of from 45 degrees port to 45 degrees starboard in a second and a half's time, it made it necessary that everything be closed tight. Not even storm ventilators could be kept open at times.

Out on listening duty was one of the most important assignments which came to the chasers. For this work the boats worked in threes known as a group. The groups were known by letters, as Group A, Group B, etc., etc. The boats in each group were designated as A-1, A-2, and A-3, etc.

The listening devices are entirely new inventions, of which little has been published and about which the Germans knew little and the American public less. Each chaser was equipped with three complete listening devices each having a different function. The "K" device was used for long-range work and could detect the presence of a submarine for upwards of ten miles with accuracy. However, the "K's" sense of direction was not good, so for closer and more delicate work other listening tubes were used. These tubes, some six feet in length and about four inches in diameter, projected through the chaser's bottom at a

location somewhat forward of amidships. They were operated by the "listening quartermasters," as they were called, of which there were two on every chaser.

By means of these listening tubes it was possible to get almost exact direction as to location of any object moving under water. The noise created by the boat's propeller could be heard by the listeners with remarkable clearness and, after a little practice the listening became so expert that they could distinguish between the noises made by a submarine, a merchant ship, a destroyer or any other type of boat.

Distance could be estimated by the listeners but with no great degree of accuracy. However, this was not a serious obstacle to overcome for as one will readily see, it only becomes necessary for one or more other boats located at some suitable distance away to get a direction bearing on the same noise and report their bearing to the flagship, who in turn put on a chart the position of the two or more listening boats and draw a line from their positions in a direction given them by the listeners. The two or more such lines would meet in a common point and that point is the exact location of the submarine at the instant the bearings were taken. Having the lines drawn to scale on a chart would also give the distance away the submarine was.

This is exactly the procedure which the chasers followed in the "hunt." They worked in groups of three as mentioned above. The flagship with a group commander aboard was in the center and the other two chasers, known as the wing boats, were 100 or 200 yards on the port and starboard beam of the flagship.

The group flagship was equipped with an instrument known as a position locator on the bridge. By means of this instrument the three chasers were kept located at all times. The bearings which each wing boat reported to the flagship, that is, the direction which each listener reported the submarine, were indicated by means of celluloid arms on the position locator and therefore the "fix," as it is called, on the submarine's position was at the point where the three celluloid arms intersected.

Now all that remained to be done was to get over the submarine's position and drop a few depth bombs and his existence ended.

The other kinds of work which the chasers performed were varied and numerous. In exploding mines laid by the Hun submarines, they did wonderful service. The Navy Department's initiative and foresight led them to make guesses as to the locations the Germans would choose for the mine fields. Our naval officers had observed from a study of the conditions on the other side, that the Germans always picked a location to drop their mines which could be readily located from a chart, that is, close to a prominent landmark such as a tall lighthouse or lightship. In this way, the enemy submarine would subject itself to a minimum of danger in its effort to locate itself when coming to the surface in strange waters. This caused our officers to believe that mines in our waters would be laid off Fire Island and Barnegat as there are tall and prominent light-houses at both these points. Sure enough, the Hun fell into the trap and let the mines go just where we expected he would. The chasers are credited with discharging many of these German mines.

(In a subsequent issue of *MoToR BOATING* we will describe the workings of an actual submarine hunt, show how the submarine is caught if he is not obliging enough to remain still, tell of the other method which must be employed if he detects the presence of the chasers and tries to fool them by remaining quiet on the bottom for hours and even days at a time. We will describe the signalling methods from wing boats to flagships by means of the loud speaking wireless telephones which enable everyone in the pilot-house of one chaser to hear distinctly everything which is being said in the pilot-house of the other chasers. We will describe the convoy work of the chasers and picture in a realistic way life aboard the chasers under all conditions.)



## EGYPTIAN DEITIES

*The Utmost in Cigarettes*  
Plain End or Cork Tip

People of culture, refinement  
and education invariably  
**PREFER** Deities to  
any other cigarette.

**30¢**

*Anagynos*

Makers of the Highest Grade Turkish  
and Egyptian Cigarettes in the World



## Yachting will soon be "Back from the War"

Thousands of yachtsmen and boat owners promptly enlisted themselves and their boats when the call came for their services.

We all know something of what they did and some day history will give us the rest of the tale. Soon the boys will be coming back.

Their work is done. They are returning wiser in experience, stronger in mind and body, and more keen in their realization of the value of their early sailing days.

Those who have boats will want bigger, better ones. Those who have none will want them—any kind, to keep fresh the memory of more strenuous days.

The game has been asleep, but it will come back and become the biggest and best sport of all. Are you ready to meet the increased demand?

You can't think about it or take action too soon. Get our catalog, listing everything from the tools to build to the highly polished brass deck fittings to "touch it off". It's yours for the asking.

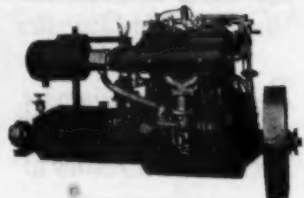
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require serviceable engines



## REGAL

Four-cycle Gasoline and Kerosene

engines have been on the market for seventeen years. Let us tell you about them. 2 H.P. to 50 H.P., one to four cylinder.

**Regal Gasoline Engine Co.**

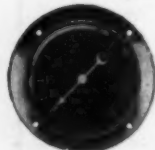
74 W. Pearl Street Coldwater, Mich.



The standardized boats. Circular on each: 24 ft. Cabin Cruiser, 16 ft. Shallow Draft, Lake and River Boat, 17 ft. Sail Boat, 17 ft. Life Saver Row Boats, 14 ft. for outboard motor.

30 Foot Special Dory.  
The safest little sea boat built, will stand the ocean waters. **CAPE COD POWER DORY CO.**  
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### A MASTERS BOATMETER



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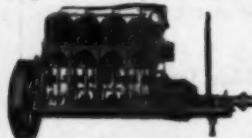
on your bulkhead insure accurate dead-reckoning. You can read your boat's speed any time with less effort than looking at your watch.  
Model B indicates to 10 m.p.h. \$10  
Model C indicates to 35 m.p.h. \$15  
Model G indicates speed to 50 m.p.h. \$18  
Sold by Marine Dealers.  
Standard equipment of leading builders. Send for Catalog.  
Muncie, Indiana

## POLARINE

The Standard Oil For All Motors

Standard Oil Co. of New York

Buy a Campbell and Keep Going



Sizes 5 to 60 H.P.  
The Engine of Accessibility  
**THE WATER CRAFT CO.**  
221 Fulton St.  
New York  
General Distributors



**LUNKENHEIMER**  
MOTOR  
ACCESSORIES  
LUNKENHEIMER CO.  
CINCINNATI

## Power Squadron's Wonderful War Work

(Continued from page 27)

Squadrons given more nation-wide importance than ever.

The Hudson River Squadron, a branch of the U.S.P.S., was the first to inaugurate its school in New York City which was later extended to one in the Bronx, one in Brooklyn and another on Staten Island. Capt. A. C. Knight was the leading spirit and was personally in attendance for over 300 consecutive nights.

Permission was granted by the officers and trustees of the Hudson River Yacht Club during the early part of the year 1917 to the Secretary of the Hudson River Power Squadron, giving him the use of the assembly room for the purpose of conducting there classes in navigation, said classes to be free and open to all who might desire to fit themselves for service in the Navy, and the first class was begun there with twenty-two pupils, many destined subsequently to become commissioned officers in the Navy.

On June 25, 1917, the school began its policy of teaching several different subjects pertaining to seamanship and to be in operation five nights a week. The teachers who took upon themselves at this time, the work of instructing all that might apply, were Commander Sigmund Cohn, Hudson River P. S.—and Leslie Huxtable, G. L. Baylies, F. W. Horenburger of the same Squadron, Commander H. A. Jackson of Huguenot Squadron, Commander Charles Lennox Wright, U.S.V.L.S.C., and Charles F. Chapman and A. C. Knight of the Hudson River P. S.

The first class had 361 students in attendance. The next began at the Hudson River Yacht Club and was carried to the High School of Commerce. This class numbered 364 men.

The School now began to experience difficulties owing to the coalless and lightless orders of conservationists. They were willing to do without heat and with a minimum of light. Owing to the kind intercession of Commander Eaton, U.S.N., who understood and was able to present their case to the proper city authorities, the schools were permitted to continue their work, instructors and pupils alike wearing overcoats in heatless rooms during the coldest winter known to the weather bureau of New York.

From this time on scholars were given cards of admission consecutively numbered for purposes of identification and to facilitate roll call. So large were the classes becoming that new schools were contemplated. The total enrollment at the High School of Commerce from February to November, 1918, was 883.

In May, 1918 it was voted to enlarge the opportunities by placing the Hudson River schools under the jurisdiction of the National Body of the U. S. Power Squadrons, Inc., and it was hoped other local bodies having nautical schools would do the same or would be encouraged to enter the instruction field

(Continued on page 54)

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Advertising Index will be found on page 80

## WHITING-ADAMS BRUSHES

ALWAYS SUIT - NEVER FAIL  
ALL KINDS  
FOR SALE EVERYWHERE



Paint Brushes  
Varnish Brushes  
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Rubber Cemented  
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BOSTON, U. S. A.

Brush Manufacturers for Over 100 Years and  
the Largest in the World

## WICKER-KRAFT YACHT FURNITURE

Used on the finest boats. Regularly supplied by highest grade boat builders. Wicker-Kraft Chairs, fitted with life belts, are an original Wicker-Kraft idea.

Write for illustrated catalog.

**WICKER-KRAFT CO.,** Newburgh, N. Y.

### OIL ENGINES

PAY BIG DIVI-

DENDS.

They use 50 fuel oil

instead of 200 gas-

oline.

SAVE 75% on

your fuel bills.

PAY for their cost

in a year's run.

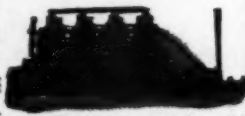
No batteries, wires,

switches, spark plugs,

carburetors or magnets. NO

TRouble.

**MISSOURI ENGINE CO.,** 2806 N. 11, St. Louis, Mo.



**MOTOR BOATS—ROWBOATS—CANOES—HUNTING BOATS—BOATS FOR DETACHABLE MOTORS. CATALOG FREE.** Prices based on selling direct to the user. Please state what kind of boat you are interested in.

**THOMPSON BROS. BOAT MFG. CO.**  
35 Ellis Ave. PESHIGO, WIS.

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MARINE EQUIPMENT  
and SUPPLY COMPANY

610 Arch St.

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"Airdrive"

Model L-2 3 H.P. for canoes, rowboats, fishing and hunting boats.

Model M-2 10 H.P. for light commercial use, and pleasure boats.

Model O-4 24 H.P. for work boats up to 20 ton capacity.

An "Airdrive" on your boat will decrease your power troubles, give you more satisfaction, and at low operating expense. Let one prove it for you on your boat.

**KEMP MACHINE WORKS**  
1217 So. Franklin Street,  
Muncie, Ind.



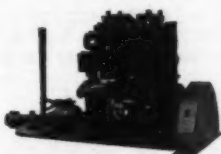
# “HONEST CLAY”

## Four Cycle Heavy Duty Engines

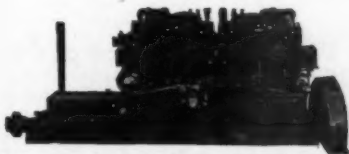
*Operate Efficiently and Economically on Gasoline, Kerosene or Distillate*



**SINGLE CYLINDER MODEL**  
Built in 6, 8, and 10 H. P. Sizes



**DOUBLE CYLINDER MODEL**  
Built in 12-14, 16-18, 20-22, and 40-50 H. P. Sizes



**FOUR CYLINDER MODEL**  
Built in 25, 35, 50 and 80-100 H. P. Sizes  
The Honest Clay is particularly popular with fishing companies, lumbermen, supply boat and general towing service, who appreciate a reliable heavy-duty engine that will operate economically 365 days a year.

For over 21 years the demand for Honest Clay engines has been created largely through the mouth to mouth advertising of satisfied users. No systematic effort was made to sell them, either direct or through dealers, as the original company could seldom build enough engines to supply even 25 per cent of the demand for Honest Clays.

### A New Company and a New Plant

Last year the new Clay Engine Manufacturing Co. was organized, with sufficient resources and prestige to develop the production of Honest Clay engines to meet all normal demands.

Early this year we moved into our present plant (formerly occupied by the Hal Motor Car Co.). This gives us five times the capacity of our former plant, with arrangements anticipated to meet future developments.

### The Same Honest Reliable Engine

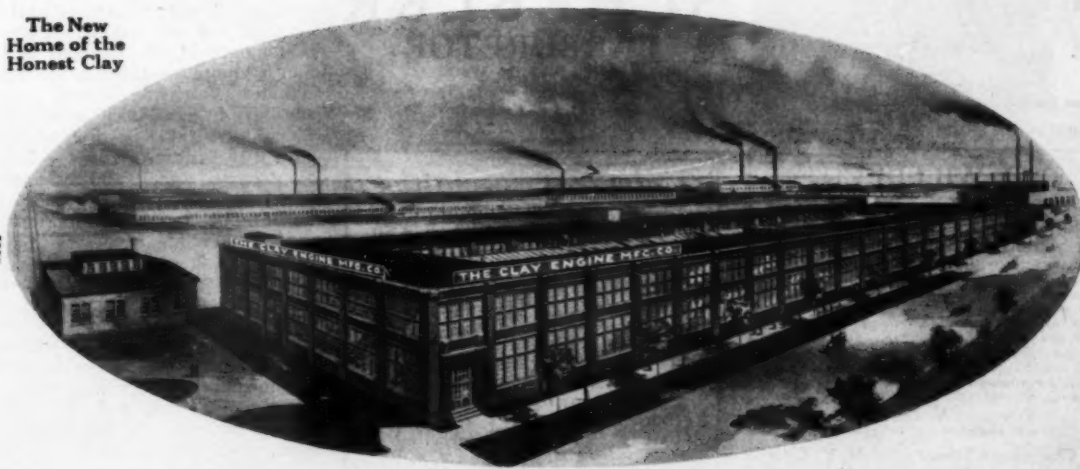
Proven by many years of hard, constant service, it would be impossible to improve the underlying design of the Honest Clay. With our new facilities, however, our engines will be made more efficient than ever, and will be continued up to the minute at all times.

### Attention Engine Dealers!

Backed by our greatly enlarged and progressive organization, we are in a position to supply engines promptly. We solicit correspondence with engine dealers and users who have the facilities and standing in their localities to take advantage of our excellent sales proposition.

**THE CLAY ENGINE MFG. CO.** 664 East 72 St.  
CLEVELAND, OHIO

The New  
Home of the  
Honest Clay

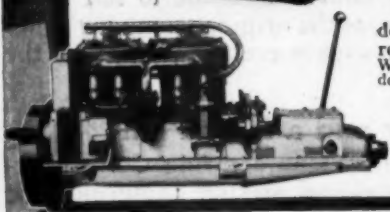


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## On the Water as on the Land— Consistently Dependable

Sustained surplus power—with-  
out the penalty of excessive fuel  
cost—is characteristic of

### Wisconsin Motors



—the choice of experienced power-  
boat men. Each motor built must  
do its part in upholding the Wisconsin  
record for consistent performance.  
Write for specifications of four and six cylin-  
der types.

#### Wisconsin Motor Mfg. Co.

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New York Branch: 21 Park Row, T. M. Fenner,  
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St., Los Angeles, Cal.

#### Arrow Motor & Machine Co.

Manufacturers of the Arrow 2 cylinder, 4 H.P.  
detachable; famous Waterman Porto 1 cylin-  
der, 3 H.P. detachable; K-1 inboard engine  
single cylinder 2 H.P., weight 36 pounds; K-2  
inboard engine double cylinder 5 H.P., weight  
60 pounds; model A-4 special 4-6 H.P. inboard.

632 Hudson Terminal Bldg., New York City

#### Aerothrust

##### Outboard Motor

The only motor for shallow water.  
Air drive 3 & 5 H.P. for light pleasure and  
freight boats. Write for catalog and prices.  
AEROTHRUST ENGINE CO. LA PORTE, IND.



#### ELECTRICAL HEATING COOKING DEVICES

Motor Yachts  
Motor Boats

Flat Irons, Toast-  
ers, Grills, Toaster  
Stoves, Curling Iron,  
Heaters, Soldering Irons,  
Air Heaters, Glass Pots,  
Etc.

American Electrical Heater Co.  
Detroit, U. S. A.

Write for Illustrated List, Prices  
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est Exclusive Makers. Established 1894.

ENJOY  
the LURE  
of the  
WAVES

K D or  
Complete

RICHARDSON BOAT CO.

No. Tenawards, N. Y.

#### E. J. WILLIS CO.

Don't wait until you are in urgent  
need of some supplies or hardware  
for your boat. Write today for our  
illustrated catalog, study it carefully,  
compare the prices with what you have to pay  
elsewhere and then send us your order for what  
you need. We will ship it promptly from our  
large and complete stock, and save you both  
time and money.

No matter what you want in the marine line,  
if it is sold anywhere in New York City we will  
get it for you and ship it the same day your  
order is received. Give us a trial.

Write today for Catalog "B"  
Sent anywhere free on request.

85 Chambers Street, N. Y. City

#### IMPROVED THERMEX SILENCER

Increases Revolutions, No Back Pressure!

Cannot clog, nor collect salt; water cannot flow back  
to cylinder. No heating, no odor. Used free or  
under water—adjustable discharge. Lightest, cheap-  
est to install. Free booklet shows why. Send for it  
today.

CENTRAL MFG. CO.,

185 Liverpool St.

East Boston, Mass.



#### "GOLDEN GLOW" SEARCHLIGHTS

Project powerful penetrating beams  
of golden light. Reflectors are green-  
ish glass and will never tarnish.  
Write for circular.

Electric Service Supplies Co.  
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Anderson Engine Co., 4032 N. Rockwell St., Chicago.  
New York Office, N. W. Cor. Broome & Lafayette Sts.

#### SCHLEBLER CARBURETOR

Standard of the World

Consistent Winner of Motor Boat Races  
The Wheeler-Schlebler Carburetor Co., Inc.,  
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#### Universal Specialties

Complete Class I Equip- ment .....	\$ 4.50
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Set of Lamps for Class I...	3.80
Set of Lamps for Class II..	7.80
Two-tone Horns .....	.90
6" Polished Fog Bell .....	1.20
12" Launch Steering Wheel	1.40
Life Preserver Pillows...	1.00

Complete catalog upon request.

Universal Motor Boat Supply Co.  
Atlantic Highlands, N. J.

## Commercial After War Plans Already Started

(Continued from page 35)

quarter of a million dollars, according  
to one authority. This would open up  
one of the most fruitful districts in  
California to river transportation.

The Sacramento River has been bet-  
ter developed, but it has lost over fifty  
miles of navigable waters through  
neglect. With better development the  
old steamers now in use will have to be  
abandoned and the opportunity of the  
gas or oil engine geared up to a stern  
wheel, if necessary, will arrive.

#### Fishing Schooner Norland

One of the new fishing craft built  
this year is the schooner Norland built  
at Tacoma, Wash. for Magnus Hansen.  
She made the trip to Juneau, Alaska,  
from Tacoma under her own power,  
carrying enough distillate to reach the  
Alaskan port without refueling. The  
Norland is 53 feet long, 13½ feet beam  
and draws 7 feet. On her trial trip she  
made a speed of 8½ nautical miles over  
a measured course while loaded with  
1,300 gallons of distillate, her full fish-  
ing equipment and supplies for her  
Alaskan trip. The vessel is powered  
with a 45 h.p. three-cylinder Acme gas  
engine, having an 8½-inch bore, and  
10-inch stroke with a power rating of  
325 r.p.m. Immediately on arriving in  
Alaskan waters she began her career of  
fishing for halibut.

#### Pilot a 52-Footer

Pilot, the first of a fleet of five to  
operate for the Fletcher-Wheeler  
Transportation Co., in the San Joaquin  
River waters about Stockton, had her  
engines completed and was turned over  
to her owners early in October. Pilot  
was built by William Cryer, of Oak-  
land, and cost in the neighborhood of  
\$12,000, according to the builder. She  
is 52 feet in length, has a beam of 13  
feet, and draft at the stern of 5 feet.  
The vessel is powered with an 85 h.p.  
Acme gas engine.

#### Oil Engines for Island Trade

Oil is cheap and plentiful in the Pac-  
ific islands. Consequently many of the  
boats in that trade which are using  
auxiliary power are turning to the Fair-  
banks-Morse oil engine. During the  
past month H. W. Peabody & Co., of  
San Francisco installed a 100 h.p. four-  
cylinder Fairbanks-Morse engine as  
auxiliary in an old schooner; and G. F.  
Slaughter & Co., of San Francisco have  
bought two engines from the same com-  
pany, one of 75 h.p. and the other of 60  
h.p. for powering two schooners used  
in the same trade. The auxiliary pow-  
ered vessel is regarded with great favor  
for inter-island trade on the Pacific.  
As many strong currents and irregular  
winds are met among the islands, an  
auxiliary motor acts as extra insurance  
for these vessels in dangerous waters.  
In ordinary times when freight rates  
are normal these auxiliary schooners do  
not use their power more than ten or  
fifteen per cent. of the time on long  
runs. But the high rates has brought

(Continued on page 54)

# The Universal Motor

## The Leaders

The UNIVERSAL 9-12 H. P. Marine Motor  
the UNIVERSAL 4 K W Generating Set

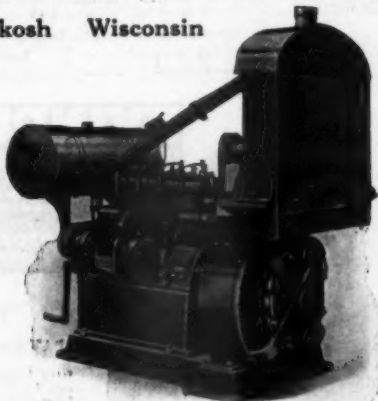
It is the ideal power plant of its size for pleasure or work boats—it offers the careful buyer an opportunity to secure a powerful reliable motor that functions with utmost efficiency at all times under all conditions.

A feature of prime importance in these days of high prices is the fact that fuel consumption is reduced to a minimum in the Universal. Fuel and lubricant is used in sparing quantities—yet full power and efficient lubrication is retained at all times.

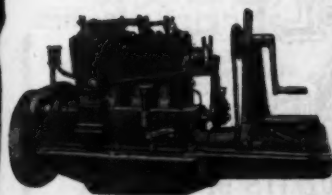
Universal motors have solved the power plant problems of hundreds of boatmen in many different parts of the world. You can do likewise by installing the most successful engine of its size in your boat.

UNIVERSAL MOTOR COMPANY

Oshkosh Wisconsin



4 K W Electric Generating Set



9-12 H. P. Marine Motor

The marine motor is its standard size for all sizes and types of boats up to 30 feet. (See bulletin No. 29.) The generating set solves the lighting problem for house boats, launches, electric cooking, search lights, cottage lighting, etc. Send for bulletin No. 26.



## KEYLESS RADIUM CLOCKS

The ideal clock for every motor boat, cruiser and yacht. The Radium Dial makes the hands and numerals visible at night.

Adopted by the U. S. Navy for Airplanes. Price \$15.00. Other clocks from \$2.50 to \$4.00.

Write for details and prices.

Keyless Auto Clock Co., 246 West 59th St., New York City.

## The Great 2 Cylinder ROWBOAT MOTOR

Only by this 2-cylinder opposed construction can you avoid the vibration which makes riding uncomfortable, opens seams and ruins rowboats. Koban has more power, greater speed, than any other rowboat motor. Write for catalog. Dealers and agents wanted.

Koban Mfg. Co., 246 So. Water St., Milwaukee, Wis.



### Nautical Instruments

Underlighted Compasses, Course Protractors, Bearing Finders. Every navigator should have them. Send for interesting catalogue. Address Box 45.

Marine Compass Company, Brantville, Mass.



**REVERSE GEARS**  
RADIATE SATISFACTION  
Five Models. Write for Prices.  
GIES GEAR COMPANY  
417 East Street East, Chicago, Ill.

**USN**  
Just the paint for your boat. Durable, lasting, economical. Does not soften under heat. Write us if your dealer hasn't it.

THE BILLINGS-CHAPIN CO.  
1167 E. 40th Street, Cleveland, Ohio  
Boston New York

**—LEECE—**

**NEVILLE**


ELECTRIC STARTING-LIGHTING SYSTEM

**OUTFITS OF QUALITY**

AUTOMOBILES

ALWAYS READY

MOTOR BOATS



**DAY OR NIGHT**

MANUFACTURED BY  
**THE LEECE-NEVILLE COMPANY**  
CLEVELAND, OHIO

## Power Squadron's Wonderful War Work

(Continued from page 50)

with one curriculum and one standard examination and diplomas for all. They were joined by the Boston, Newburgh and Detroit Squadrons and the Committee on Examinations of the Governing Board was given jurisdiction over all U. S. Power Squadron Schools.

On the evening of May 15, 1918, the second New York School was opened with much ceremony at Bronx Branch Y. M. C. A. The national colors were raised under powerful searchlights, while a Navy band of 100 pieces played the anthem. Many prominent speakers were heard. The start of this school was in great measure due to Mr. E. L. Moraller and it was carried on to its conclusion under the leadership of Vice Commander H. M. Williams, U.S.P.S. This school had a total number of over 500 pupils.

About this time a Squadron school was opened at the Mine Sweeping Base, Staten Island, with 60 pupils. A beautiful pin was also produced for the Nautical Students to wear.

The fourth effort, the Brooklyn School, began at Central Branch Y. M. C. A. July 8th, 1918, under favorable auspices. Commander Mansfield again sent the Navy band and there were speeches by many prominent men. The committee work of raising funds, etc. to start this school was done by Mr. Dean Potter. The School was moved to P. S. No. 15, State and Schermerhorn Streets, where it terminated at the close of the war with an enrollment of 775 pupils.

Members of the Faculty of the U. S. Power Squadrons Free Nautical Schools of New York City:

Com. Harry Anderson, G. L. Baylies, Com. G. G. Bell, Carl Brandt, Com. Sigmond Cohn, Com. Charles F. Chapman, Ensign Richard Crow, Capt. Sydney S. Daniels, Kenneth B. Doherty, Alan Everly, Com. John A. Filsner, William Dawson Gaillard, Walter Gallagher, Howard Gregory, F. W. Horenburger, Leslie Huxtable, William A. Irwin, Com. Harry A. Jackson, Emanuel Kandel, Albert C. Knight, Gordon Knight, Ed. Knowles, Lieut. William F. Lally, Andrew Lee, D. H. Lenox, Chas. E. Manierre, Com. E. W. Marshall, Capt. John Munroe, Louis S. O'Dell, Dean Potter, J. J. Potter, Alexander C. Patterson, H. Topping, R. A. Van Clief, Com. H. M. Williams, Isaac Winston, Charles Lennox Wright, J. Ernest G. Yalden, Charles Zirn.

## Commercial After-War Plans

(Continued from page 52)

about a much greater use of the engine power even on the long runs. But there is no dispute among ship owners about the advantage of auxiliary power among the islands, and it is said that many a disaster has been averted by the ability to go ahead at a critical time when the wind has failed and the current is on the rocks.

**Baldrige** Reverse Gear

You can get a Baldrige — the original all-enclosed, time-tested reverse gear — now — for immediate delivery. See it "For the Man in the Boat." Free. THE BALDRIGE GEAR CO. Boston, Mass.

## GASOLINE ENGINES

4 to 400 H. P.

Heavy Duty and High Speed  
Noted for Reliability

MURRAY & TREGURTHA CO.  
South Boston, Mass.

## INTEGRAL CAMSHAFTS

We make them for the leading builders of marine, airplane and automobile motors. We are Integral Camshaft Specialists, insuring the utmost in quality of workmanship and materials, accuracy and uniformity.

Let us quote on your designs.

MUSKEGON MOTOR SPECIALTIES CO.  
Muskegon, Mich.

**Sootless** THE BRASS PLUG B.I.D.

The Aristocrat of Spark Plugs  
DAMPNESS AND SPRAY PROOF  
The Brass shell won't rust into cylinder head  
OAKES & DOW, 46 Chardon Street, Boston  
NO PORCELAIN TO BREAK

## RE-COVER YOUR OWN BOAT TOP—SAVE ONE-HALF

Write for catalog of materials and measuring chart. Send us measure of your old frame and we will send new cover cut to fit.

The Cincinnati Auto Specialty Company,  
312-314 Main St., Cincinnati, Ohio.

**EVINRUDE**

Detachable Rowboat and Canoe Motors are standard. Built-In Fishwheel Magneto Automatic Reverse. New method of balancing gears wonderfully easy and vibrationless running.

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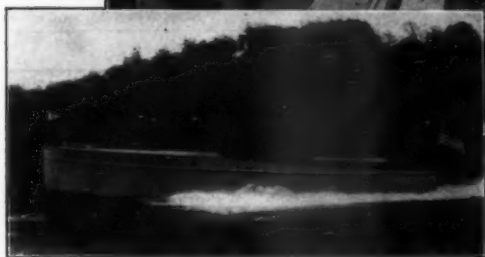
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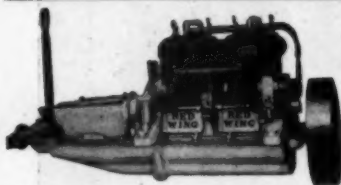


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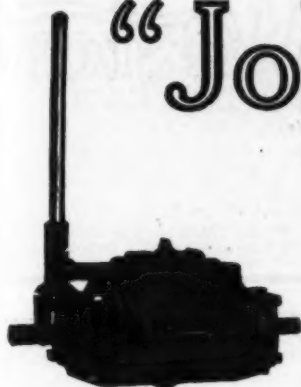
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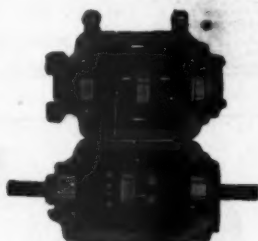
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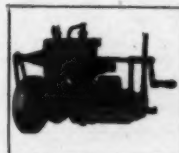
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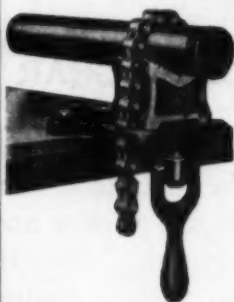
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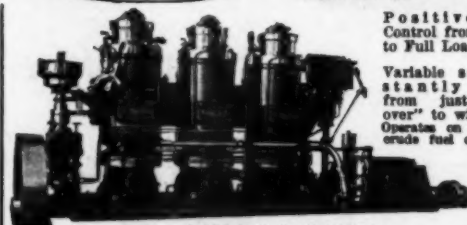
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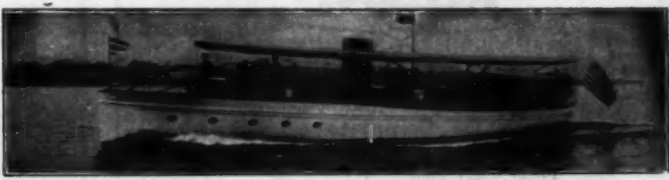
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**LUDERS**  
*The Last Word in Yacht Designing  
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2-Cylinder—6 1/2" x 8 1/2"—18-20 H.P.—400 R.P.M.  
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Strictly high grade four-cycle engines, built for  
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**Improved  
Motor  
Boat  
Closet**



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to top of bowl;  
2 1/4" cylinder.  
For above or  
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line.  
The best little closet on the market today, possess-  
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All brass and porcelain. Oak seat and cover.  
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has been designed in accordance  
with our wide experience in  
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**With Pump**

Cock on pump  
swings upward,  
thus preventing  
breaking of  
bowl. Soap-dish  
is porcelain and  
removable.

No. 5  
Height, 19 in.  
Width, 19 in.  
Depth Closed,  
6 inches.  
Quartered Oak  
Case, Each,  
\$42.50  
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Lining and Fixtures  
Nickel-plated. Porce-  
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Fig. 1392

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\$80.00



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Cut of 3 cyl. 6 H.P. motor and cut  
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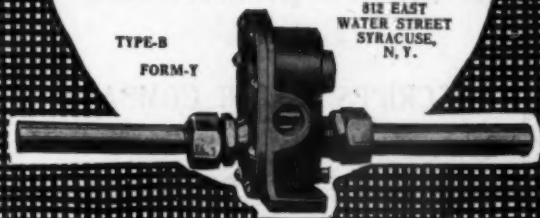
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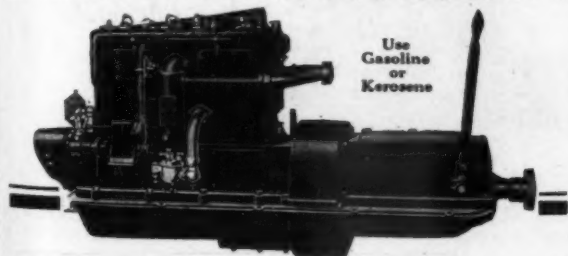
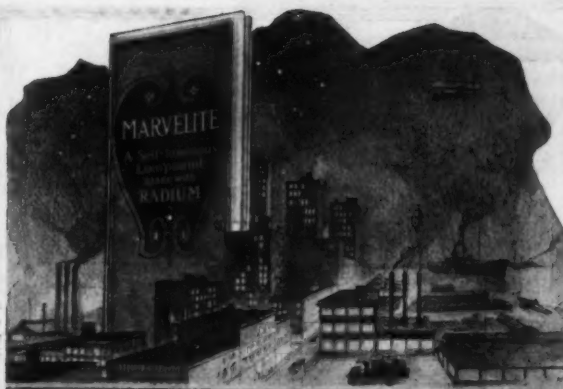
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First aid in  
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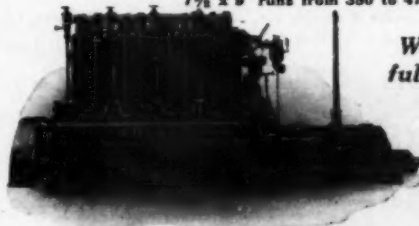
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*Built up to a Standard—not down to a price*

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For Commercial Boats and Cruisers

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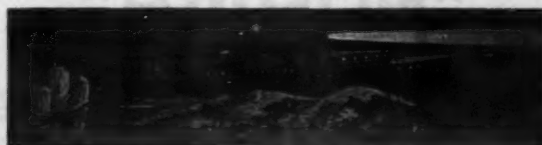
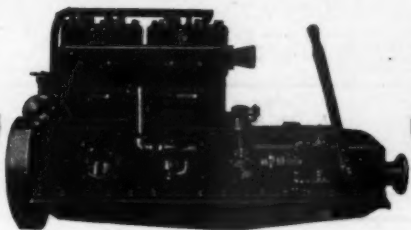
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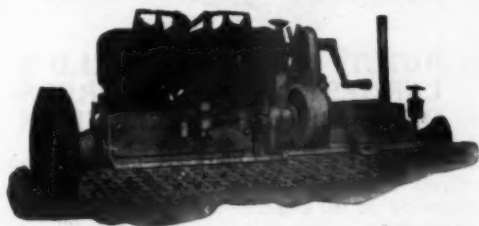
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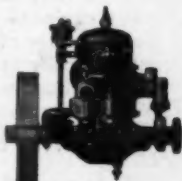
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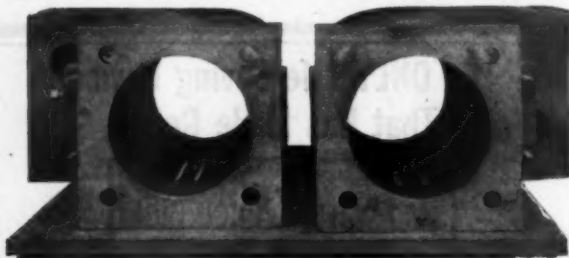


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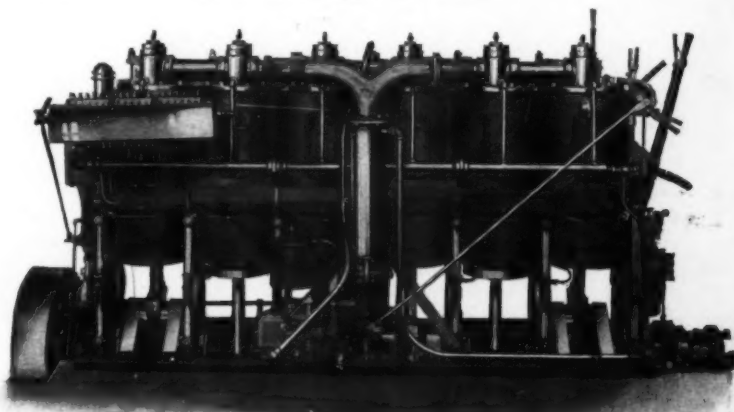
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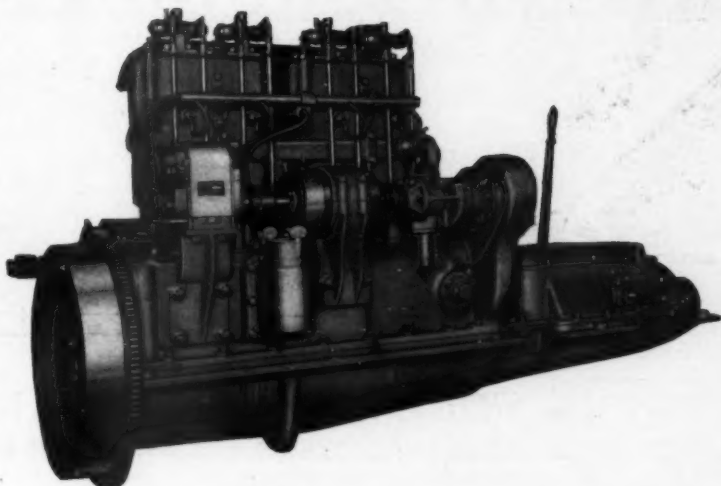
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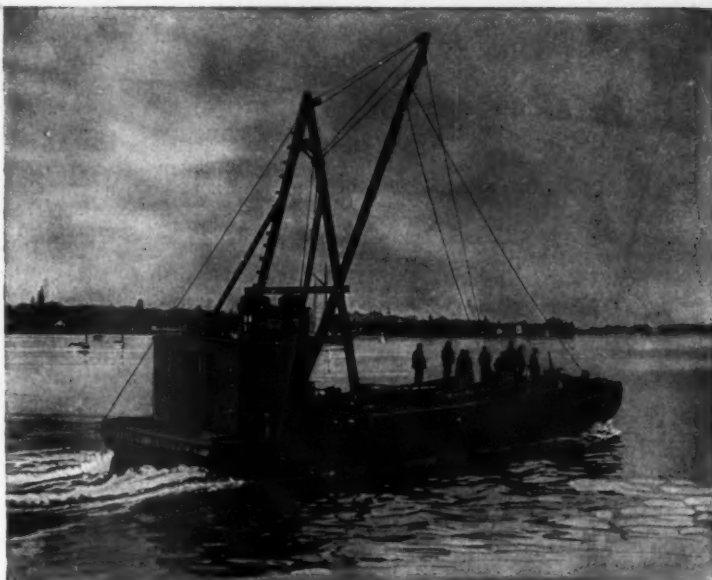
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## Possibilities of Motor Fishing Boats

(Continued from page 34)

winter when a gale might have swept the adventurers to death, it was his opinion that they were looking for a likely spot to fish where they would not have to give the "snap" away to compatriots.

These Italians have a way of locating fish that proves highly effective at different seasons. By resorting to the sounding lead it is easy for them to fish over ground that should be productive. Knowledge of the habit of marketable varieties assists, therefore, in their destruction. Suppose, for illustration, it is winter time and the Italians are fitted for flounders. This variety loves comfort and, when the water is cold, burrows in mud as we creep under extra blankets. Conversely, in summer, they abound in sunny sand and cover themselves lightly.

These flounder fishers carry a net with rigid mouth held open by board runners and scrape the ocean bed with the contrivance which is towed at moderate speed. Essentially, the net is that employed by the big otter beam trawlers transplanted in the North Atlantic a dozen or fifteen years ago from the North Sea. Although the Italian does not rely on a chart when plotting the area he is to drag he must, of necessity, employ a compass. Right here, the navigational instrument on this type of boat is wonderful to behold. If it looks like a compass, all right and, if it can be had in some Atlantic junk shop at a nominal figure, so much the better.

In a general way, only, are these instruments reliable and no allowance ordinarily is made for deviation. As long as the needle will give the general direction good. For example, if the boat is off the tip of Cape Cod and would fetch Boston, she is headed west by the compass. That might make a landfall, if held to the course, anywhere from Cape Ann to the entrance of the Cape Cod Canal, a matter of seventy miles on a 50-mile run. Having no strict regard for a fine points in steering, the boat chugs along till some vessel is sighted and the checking up then begins. Having intimate knowledge of shipping the Italian determines the trade of the distant vessel and may mention her name.

This identification serves his purpose as well as would a pilot equipped with all the arts of the sea in safe conduct to port. The fisherman knows whether she is from Boston; or, perhaps, bound there. He steers so as to thread her track and, as time progresses, encounters other vessels that point the way. Once the boatman sights land he is indifferent to the friendly coasters and, by cutting buoys and sliding across flats saves his gasoline and gains in time over traffic of the same relative speed that holds to the channels.

Occasionally a bunch of these boats undertake successfully extended passages, say of 200 or 300 miles. Again, the thriftiness of the alien is demonstrated, particularly in conservation of fuel. The boats are made fast tandem, with the most powerful ahead and the slowest at the very end. The procession starts with the best navigators in the erstwhile flagship, which also carries the man best equipped with local knowledge. The flagship of these long flights is specially provisioned and it is remarkable what a quantity of bread, onions and bottled beer may be stowed in a 30-foot motor boat without crowding the personnel on deck. Thus they start for the new grounds, all the boats working motors just enough to keep the hawsers taught. In this manner the slowest boat, probably a 7-miler, goes at the rate of eight, that is, provided the head boats are sufficiently powerful, she gets a lift that proves quite helpful.

Should the weather come off bad the boats are held together till the wise men in the flagship conduct the flotilla to a snug harbor. By the same token a deranged motor makes small difference with the sum total of the expedition for that boat is towed without materially decreasing the day's run. Arrived at the grounds the trawls are set, usually twelve tubs of 400 hooks each to the boat of average size. The hooks are on ganging and spaced six feet apart on the line, therefore the little black flags that mark the buoys at each end of the gear may be a long distance apart. Day and night the men tend these trawls and haul in cod and haddock. Sometimes, if fish are plentiful and biting greedily a single set will fill a boat with capacity of two or three tons.

(Continued on page 72)

# PARAGON TRANSMISSIONS

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You who have had experience with Paragon's exclusive direct line drive on the reverse know that you're using all the power that your motor develops. You know too how gently and smoothly the powerful Paragon clutch takes hold when you throw it in. That's why fishermen who have to start and stop their heavily loaded boats so often all swear by the Paragon.

Nearly all good marine motors today have adopted Paragon transmissions as regular equipment.

Paragons are also doing their bit on the marine motors in the U. S. Navy—not have they only recently enlisted—they've been regulars in the Navy for years. Shall we send you our Illustrated Marine Motor Booklet?

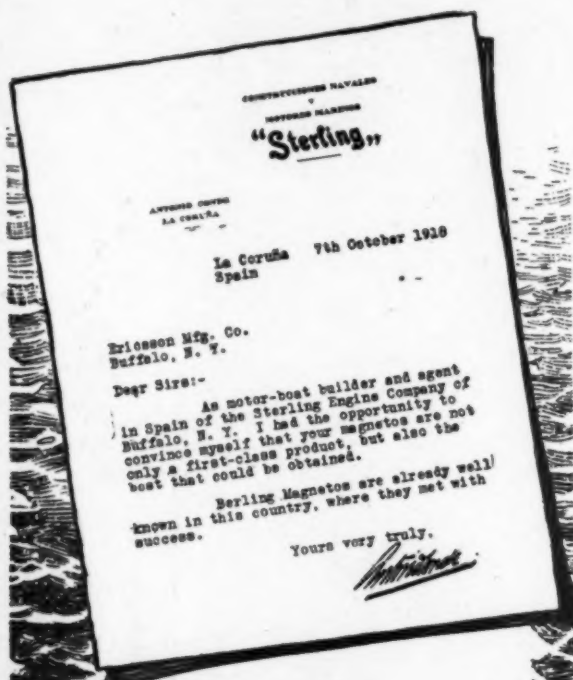
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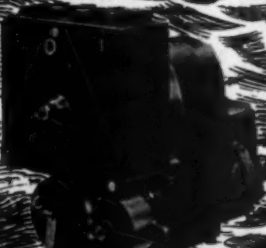


## From Spain comes approval of the Berling



# Berling Magnetos

Ericsson Mfg. Company  
Buffalo, N. Y.



WORTH MORE  
DOES MORE

## American Marine Motors Clay Heavy-Duty Marine Motor

(Continued from page 33)

accurately machined. The camshafts are also of cold rolled steel and are held in bearings which are attached to the cylinder casting. By this arrangement it is possible to remove the cylinder head without disturbing the cam or camshaft.

Lubrication is assured by a ratchet driven force-feed oiler piped to the cylinder walls, main bearings and crank pins. The latter is provided with a cupped shim into which the oil is dropped and from which an oil duct leads it to the bearing surface. The larger sizes are equipped with a high tension K.W. magneto but the smaller ones are regularly equipped with a timer and coil. A throttling type governor operating a throttle in the intake manifold effectively prevents the motor from racing when the load is thrown off or stalling when the load is applied.

## Gulowsen Grei Oil Engine

(Continued from page 33)

cially large for easy inspection or removal of the connecting-rod bearings when desired. The cylinders and cylinder heads are cast of a special hard, close-grained, tough gray iron and provided with water jackets of ample size.

The crankshaft is cut from a steel forging, machined all over and carefully counterbalanced. All bearing surfaces are ground to a fine finish and high degree of accuracy. The connecting rods are made of mild steel and machined all over. Both ends are fitted with adjustable bearings, the upper one being phosphor bronze and the lower one bronze lined with nickel babbitt. The main bearings are of the two-part bronze type lined with nickel babbitt and to facilitate removal or adjustment they are arranged independently of the crankcase.

Another interesting feature of this engine is the thrust bearing which follows the marine steam engine practice. The yokes which take the propeller thrust are removable for inspection or rebabbitting without disturbing the thrust shaft or bearings.

All Gulowsen Grei motors are equipped with a governor of the centrifugal type which acts directly on the fuel pump. The stroke of the pump is automatically altered according to the power required from the engine thus keeping the fuel consumption down to a minimum.

## Possibilities of Motor Fishing Boats

(Continued from page 70)

The catch is iced as fast as it is prepared for market and the return trip is undertaken at once if the weather is at all propitious. Sometimes, however, local fishermen strenuously object to visits of the "ginny" and real combats ensue. I have known of a flotilla arriving in Penobscot Bay from Boston only to return much the poorer in personal property but considerably richer in experience. The native fishermen objected to the invasion, it seems, and under cover of night stole out and cut the Italian gear at the buoys so completely that every string of trawl went to the bottom without leaving a trace. Of course there was nothing for the Boston contingent to do but return and refit. Large quantities of ice went to waste and the bait became valueless as a result but the warning was plain enough that future invasions of Penobscot waters could not be made with impunity.

As for bait, the Italian is a connoisseur as to the ripeness of tidbits at various places and at different seasons.

The haddock likes to have his bait a bit fuzzy, on the ragged edge, as it were, if the fishing is to be done over muddy bottom. Therefore the expert tempers the bait with such nicety it would drop apart unless used at a certain day and hour. For cod, on sandy bottom, he permits the ageing to stop a bit earlier, the aristocratic cod being more particular as to quality of the storage stuff handed out by the tempter.

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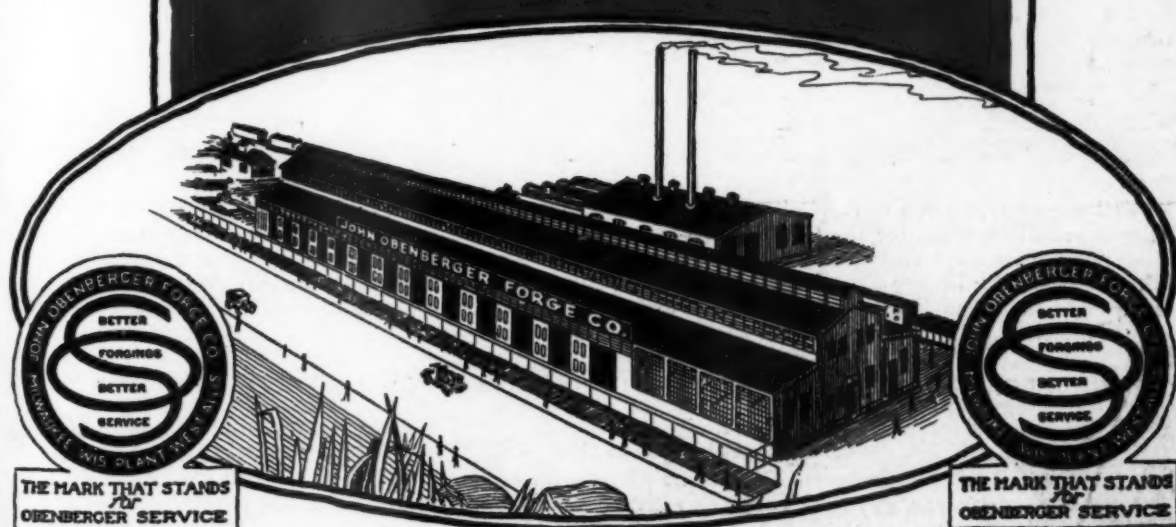
While a quantity production necessitates speed on the part of our workmen, every member of the Oberberger organization is pledged to maintain in each operation, that "quality first" principle that has made our reputation what it is.

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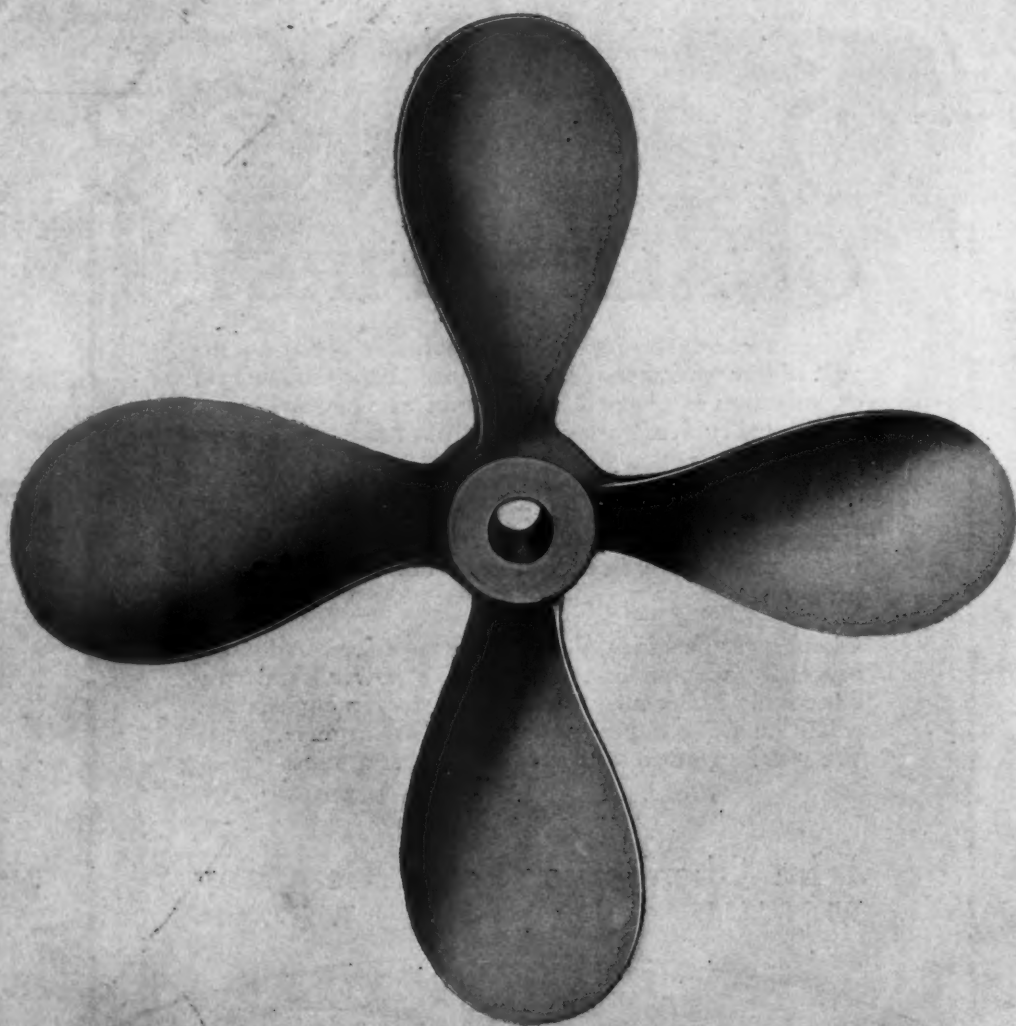
Write for the facts.

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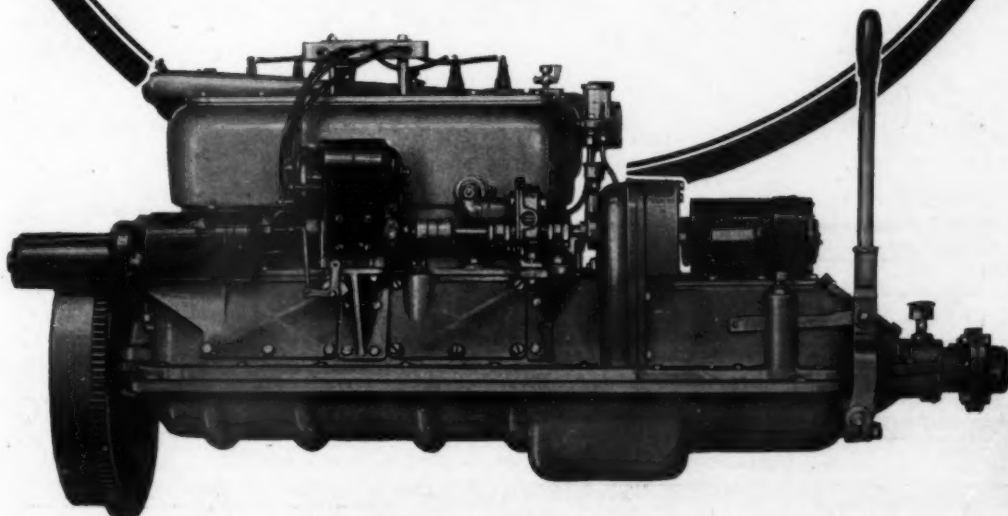
Now we are ready to take care of you again. Naturally we are in a better position to render Kermath service than before. Our greatly enlarged plant is available immediately for the construction of the engine we most desire to build—the reliable Kermath power plant for commercial and pleasure use in time of peace.

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*the friendly motor*

**F** R I S B I E Motors give long, uninterrupted service with practically no repairs except occasional grinding of valves. Valves in cages, accessible in a few seconds. An "all muscle" construction throughout, every part designed for *hard work*. Overhead valves, opening directly into combustion chambers. No pockets or crevices to gather carbon, and waste fuel. This type of construction effects a gain of

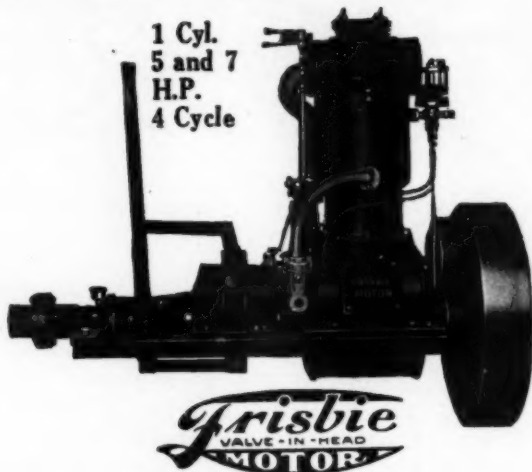
**15% to 20% More Power**

than is possible with L or T-Head designs. Intake and exhaust manifolds are cast integral with the cylinder; miles ahead of the old, leaky, bolted-on manifolds. Large valves insure full charge on the intake and a complete, clean exhaust. On all our motors we can install

## A Guaranteed Kerosene Motor

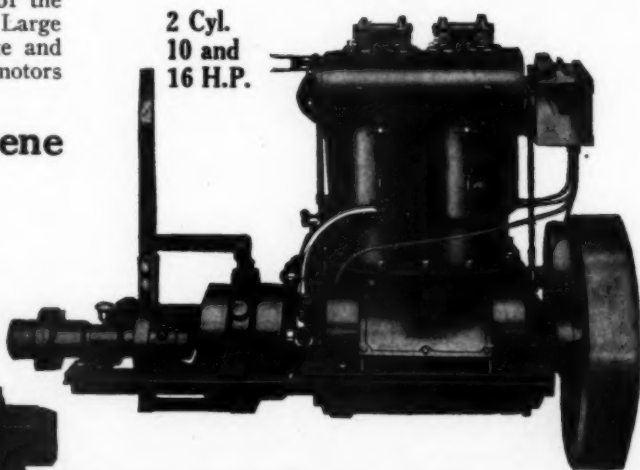
Shown Below

Burns kerosene or gasoline, or any mixture of either. No carbon troubles. No odor. Perfect lubrication. A thorough success; it ran our entire factory for two years. If you want to keep down Old Man Overhead, let us introduce you to his mortal enemy, KEROSENE!



1 Cyl.  
5 and 7  
H.P.  
4 Cycle

*Frisbie*  
VALVE-IN-HEAD  
MOTOR



2 Cyl.  
10 and  
16 H.P.

## 1 to 6 Cylinders—5 to 75 H. P.

Frisbie Motors are made in following sizes: 1-cyl., 5 and 7 H.P.; 2-cyl., 10 and 16 H.P.; 3-cyl., 18 and 25 H.P.; 4-cyl., 30 and 40 H.P.; 6-cyl., 50 and 75 H.P.—Bore and Stroke,  $4\frac{3}{4}$ "x5" and 6"x6". For work or play, the Frisbie will measure up to your hardest tests.

## Send For Literature

showing the complete Frisbie line, from 1 to 6 cylinders, 5 to 75 H.P. Also ask for complete details about Frisbie Kerosene Burning Motors.

**THE FRISBIE MOTOR CO.**  
7 COLLEGE STREET - MIDDLETOWN, CONN.



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## Dependable Spark Plugs

### *Fluted Porcelain, Shorter, Stronger*

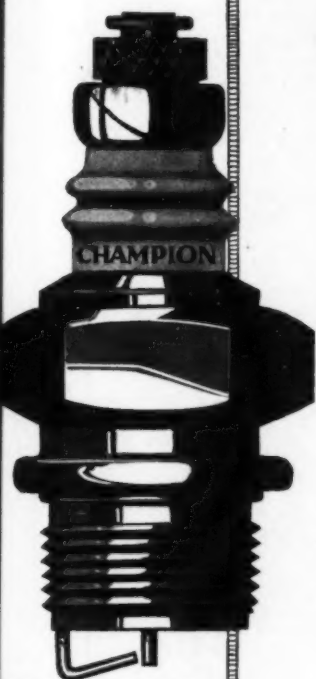
An overwhelming majority of motor boat owners know from experience that it pays to use Champion Spark Plugs.

They also know that it is wise to make sure the name Champion is on the porcelain as well as on the box—by so doing they avoid substitutes or inferior plugs.

You will know the genuine Champion Spark Plug by the unusual design of the porcelain-fluted like a high tension insulator—shorter, stronger, less liable to breakage from shock or vibration. Yet it offers the same amount of surface as the usual longer unfluted porcelain.

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Toledo, Ohio.

*Champion Spark Plug Co. of Canada, Limited*  
Windsor, Ontario



Champion Truck and Marine  
Plug J. A. S.-43-7/8-18.  
Price, \$1.25



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*Get this book and learn all  
about Power Boat Engines*

Bristling with valuable suggestions and interesting information, this book contains the very essence of what you must know to buy your boat engine intelligently.

The book describes and pictures the complete line of *LA* Engines for launches, cruisers, work-boats, etc. It gives you comprehensive knowledge of the size and power of engine for your boat. And it offers timely advice to aid you in your selection.

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*Inboard and Outboard* *2 & 4 Cycle—2 to 20 H.P.*

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Ranging from the portable 1 cylinder, 2 h.p. outboard engine to the big 4 cylinder, 20 h.p. inboard motor, the *LA* line is complete and embodies throughout the same fine workmanship and skillful engineering.

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They are beautifully clean and compact in their lines, easy to understand and readily accessible in all parts. They accurately meet the requirements of the man who demands a thoroughly dependable power plant for pleasure or work boat. Five well-known engineers selected *LA* Engines because they proved *LA* superior ability. The 30 Days' Trial Plan gives you a generous opportunity to determine *LA* performance before you decide.

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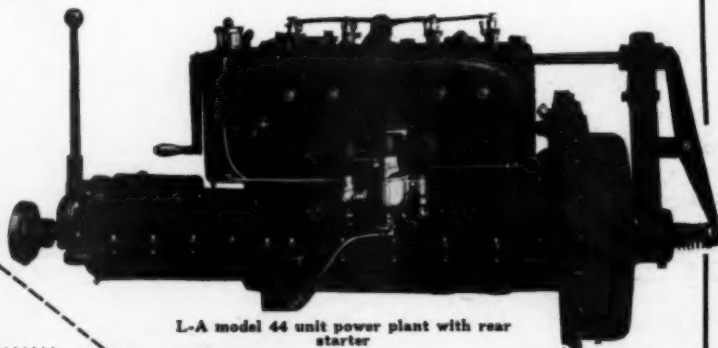
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L-A model 44 unit power plant with rear starter

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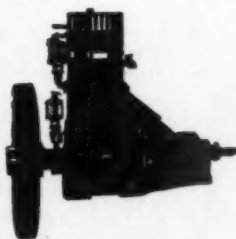


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gines are giving the utmost in satisfaction is evidenced in the thousands now in all kinds of service throughout the world. We also build complete boats, independent lighting units, pumping sets, etc. Catalog?



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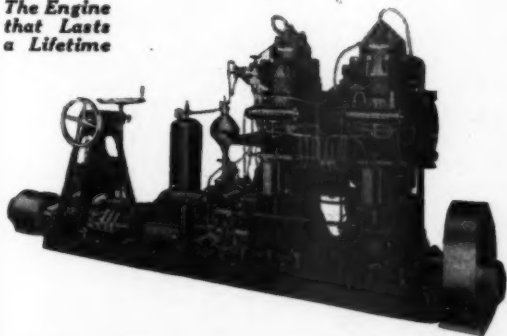
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**WORCESTER, MASS. :: CLEVELAND, OHIO.**

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**Power Plant Perfection  
 for the Work Boat**



*The Engine  
 that Lasts  
 a Lifetime*



The Gulowsen "Grei" Engine is a powerful heavy duty power plant that operates efficiently and economically. It is the oldest crude oil engine on the market today, having been built for the last sixteen years.

It burns crude oil and may be had in a variety of sizes from 4 to 360 H. P. Under normal conditions it consumes about  $\frac{1}{2}$  pint of fuel and less per H. P. per hour.

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4 to 100 B. H. P. ready for immediate delivery from Seattle or New York. Reasonable deliveries on larger sizes up to 360 B. H. P.

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**T**HE little hands get very grimy and dirty sometimes. Clean them with Goblin Soap. It leaves the skin soft and smooth and in a healthy condition.

The soft, creamy lather of Goblin Soap delights everyone, especially the little folks; it dissolves the most obstinate dirt and will not injure the most delicate skin.

Fine for office or home, toilet or bath, kitchen or workshop—once used it becomes one of the indispensables.

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